Janet Maker
Minnette Lenier

College Reading

Book 3

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College Reading

Book
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Based on the nationally renowned University 101 college orientation program at USC, with 22 essays by experts from all over the country, offering helpful guidelines for all aspects of college life—including academic, social, extracurricular, and personal

College Reading

Book

3

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To the Instructor

This book, the most advanced in the *College Reading* series, was written for students in reading efficiency courses. It is divided into three units. Unit I, General Interest Reading, is preceded by skills instruction in reading efficiency. Unit II, Textbook Reading, is preceded by skills instruction in the four major study-reading techniques. Unit III, Fiction, is preceded by skills instruction in techniques for reading fiction.

The articles were carefully chosen to enhance student motivation. The general interest nonfiction articles cover topics such as famous people and new discoveries in science, and topics of relevance to college students, such as how to improve test-taking skills and how to enjoy poetry. The textbook selections in the study-reading section were chosen from a wide variety of college subjects. The short stories in the fiction section represent a variety of tastes.

Each selection is followed by ten multiple-choice comprehension questions divided into three categories: Subject and Main Idea, Details, and Inferences. There are two open-ended questions for discussion or writing. Students are also tested on the five most difficult words in the selection and are referred to the context in which the word appeared. Anwers to vocabulary questions and to objective comprehension questions are in the back of the book. Guidelines for answering the open-ended questions are in the *Instructor's Resource Manual.*

To help students pinpoint their weak areas, there are three charts in the back of the book. The Rate Chart allows students to compute the number of words per minute they can read. The Comprehension Chart is for recording responses to each article's comprehension questions. The Progress Chart is for tracking comprehension and rate. These charts help you to identify students who need individual attention and to group students with similar abilities.

The text also contains a timed pretest and posttest using two articles of the same reading level. Because the articles in the book progress in difficulty, the improvement in students' reading rate and comprehension may not be as evident on the Progress Chart as on the pretest and posttest.

The *Instructor's Resource Manual* contains guidelines for answering the subjective questions, readability data, speed reading (perceptual) drills, instructional suggestions, and skills exercises for all reading selections. We believe that putting the exercises in the manual rather than in the text maximizes instructor flexibility. The reproducible exercises cover the skills of skimming, scanning, study reading (SQ3R, outlining, mapping, and summarizing) and of reading fiction (analyzing plot, theme, characterization, and setting).

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To the Student

This text, the most advanced in the *College Reading* series, is intended for students who want to improve their reading efficiency. It contains twenty-four nonfiction articles of general interest, ten articles from college textbooks, and six fiction selections. Within each section the articles progress in difficulty.

Each reading selection is followed by two exercises. The first is a Comprehension Check. You should not look back at the text when answering these questions. The Comprehension Check asks three types of questions. First, you are asked to find the subject and the main idea of the selection. The *subject* is what the whole selection is about. The *main idea* is the main point the author is trying to make about the subject. Next, you are asked to recall several major *details* from the article. Finally, you are asked to draw *inferences* from the material. Inferences go beyond what the author has stated, so you must read between the lines to draw conclusions from what is presented or apply the information to new situations.

After you have completed the Comprehension Check, you should check your answers in the back of the book and then record the information on your Comprehension Chart. As you progress through the book, you probably will find which type of question causes you the most difficulty. If you are having trouble with any one type, ask your instructor for help.

After you have recorded your comprehension score, locate your speed on the Rate Chart and record it on the Progress Chart in the back of the book. Remember, not all the types of readings are the same; you cannot expect to read textbooks at the same rate as you read fiction, for example. Be sure that you compare similar types of reading.

After you have completed the Comprehension Check, move to the second type of exercise, the Vocabulary Check. Here you will find five difficult words from the article you just read. You will probably know the meaning of each word or will be able to make an educated guess about the meaning from the context in which each was presented. If you do not remember how a word was used, you may look back at the sentence by using the page number in parentheses after the word.

If you find that you are missing any words, you should look up a complete definition in the dictionary. If you think that the word is important to remember, write it and its pronunciation on a file card. On the back of the card write the definition and a sentence using the word correctly. You can carry these cards with you to review between classes or during other free time.

In order to evaluate your progress on the entire book, a pretest and a posttest are provided. Since the articles in the textbook progress in difficulty, your Progress Chart may show no gain in comprehension or speed, even though growth has actually occurred. The articles used for the pretest and posttest are of the same level of difficulty and are written in the same style.

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PRETEST

Read this article. Write your starting time here: ________.

Sitcom

Edward Jay Whetmore

SITUATION COMEDY HAS been part of television from the beginning. *I Love Lucy* (1951–61) was one of the first and certainly wins the longevity award. It has probably been recycled more than any other program on TV. Lucille Ball was the first of many "dingbat wives" who appeared in sitcoms on television. Desi Arnaz was the husband and father. He wasn't too bright, but he patiently tried to keep the "situation" from getting out of hand. Of course, it is when the situation gets out of hand that it begins to be funny. The sitcom fulfills audience needs to be amused and entertained.

In contrast to the ever-present *I Love Lucy,* many sitcoms don't last long: the average life span is a season or less. Most are based on situations that seem funny at first, but writers soon run out of ideas, and there is always a new show waiting in the wings. In the 1950s, a show was guaranteed a berth for 39 weeks. Now a show is lucky to make it for ten weeks—many are canceled after only six weeks on the air. NBC began something called the "second season" in the mid-1970s to promote the shows replacing the fall failures. With the TV season now less than 25 episodes long, many predict that the "season" concept will soon disappear. Shows will just come and go at will, being replaced as ratings fall.

In recent years, TV viewers have shown a marked preference for sitcoms. By the early 1980s these programs occupied more TV time than any other genre. Many were the product of the most prolific sitcom producer of them all, Norman Lear. Lear first hit prime-time paydirt with *All in the Family* in 1971. He rapidly launched a string of sitcoms based on the success of Archie Bunker and company, including *Good Times, Maude,* and *The Jeffersons.* Most were readily identifi-

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able by the Lear formula: "realistic" dialogue and a tendency toward racial and ethnic controversy. There were often stories involving sex, drugs, and abortion.

Lear deserves more credit than any other single person for introducing previously taboo subjects to TV shows. In the 1970s, he forced television to grow up, contending that the audience was ready for something a little different. By 1977, there were nine different Lear productions on the air, leading more than one critic to conclude that his "fresh new approach" was no longer fresh. Even Lear had fallen victim to a TV reality: *That which is successful must be imitated incessantly.*

Nevertheless, his shows revolutionized the genre. Sitcoms had been easy-to-swallow little stories reinforcing traditional American values (for example, the father is the head of the household). With Lear they became an active social force exploring suicide, unemployment, racism, and women's liberation. Not everyone is enthusiastic, of course; many feel such matters are better examined in a more sober context, such as a documentary. But Lear's commercial success assured him a place on TV.

Another stable of 1970s' sitcoms was built by the producers of the highly rated *The Mary Tyler Moore Show* (1970–77). Some, like *The Bob Newhart Show* (1972–78), featured all new characters; others, like *Rhoda* and *Phyllis*, were spinoffs from another show. While these did not have the constant preoccupation with controversial issues, they did raise the "state of the art" of sitcoms significantly through skillfully constructed plots and carefully written scripts. Audiences appreciated the "quality" sitcoms and made these programs among the most successful of the 1970s.

One trend involved scripts with multiple situations. Several subplots would be woven in while the main plot was working itself out. This lent diversity, provided new joke material, and seemed to involve the audience a little more. Sitcom producers of the 1970s were also bent on convincing the audience that their characters had depth. In doing this, they often wrote more complex scripts that allowed a character that had been stereotypically "funny," let's say, to experience a serious situation. During the seasons that *The Mary Tyler Moore Show* headed CBS's Saturday night lineup, the characters developed significantly. Mary grew from a prima donna to a capable working woman. Mr. Grant developed from a no-nonsense boss to an often troubled and sensitive person. In fact, in various episodes the character created by Edward Asner went through a divorce (there was never a reconciliation) and became a borderline alcoholic. Hardly the kind of material for *Father Knows Best*! The character was so strong, it was spun off into the hour-long drama series *Lou Grant*, which many critics hailed as one of the best new shows on television in 1977.

Meanwhile, the success of shows like *Happy Days* (1974–) and *Laverne and Shirley* (1976–) was part of the nostalgia craze. Both were set in the 1950s and originally aimed at the audience that was in high school during that time. (People in the 25–49 age group are the most desirable audience, since they buy most of TV's advertising products.) These shows won that audience and much more. Young people seemed to turn their record players off long enough to watch their favorite nostalgia characters, particularly Winkler in his role as the Fonz.

Happy Days, Laverne and Shirley, and *Mork and Mindy* formed a successful trilogy of sitcoms for Gary Marshall, who heads one of TV's most successful production companies. Marshall admits that most of his programs go for the "belly laugh" rather than the social controversy that marked the efforts of producers like Lear.

The most successful sitcoms of the early 1980s seemed to reflect this general belly-laugh philosophy. *The Dukes of Hazzard* was continually rated among the top ten, along with *Three's Company* and *Mork and Mindy*. Only *M*A*S*H** (1972–) seemed to be able to draw top ratings while making serious social comment, perhaps because it combined that comment with a lot of visual comedy.

Unlike other TV genres, sitcoms seem to come in only one size: 30 minutes. Hour-long sitcoms don't seem to hold the audience, though once in a while a "special episode" of an hour or longer will be aired in several parts on successive weeks.

1000 words

Write your ending time here: ______________________________

Subtract your starting time: ______________________________

Total time: ______________________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. genres of TV shows.
   b. analyses of successful sitcoms.
   c. plots of sitcoms.
   d. the history of sitcoms.

2. The main idea is that
   a. sitcoms are the most popular type of TV show.
   b. themes of sitcoms have become increasingly adult.
   c. sitcoms have varied during their history.
   d. successful sitcoms are based on nostalgia.

Details

3. Based on sitcoms, people in the early 1980s seem
   a. less interested in social controversy than they were in the 1970s.
   b. more interested in social controversy than they were in the 1970s.
   c. to have about the same interest in social controversy that they had in the 1970s.
   d. completely uninterested in social controversy.

4. The popularity of sitcoms has been
   a. decreasing.
   b. increasing.
   c. about the same.
   d. based on an improvement in the acting.

5. One trend in sitcoms of the 1970s was to
   a. show dingbat wives.
   b. go after the belly laugh.
   c. show characters in depth.
   d. do all of the above.

6. The average sitcom lasts
   a. a maximum of one season.
   b. at least two years.
   c. five years, including reruns.
   d. longer than it deserves.

Inferences

7. Based on sitcom characters of the early 1980s, you could infer that sexual stereotyping
   a. increased since the 1970s.
   b. decreased since the 1970s.
   c. was the same as in the 1970s.
   d. was absent.

8. The changes in sitcoms in the 1970s made them more suitable for
   a. children.
   b. adult viewers.
   c. prime time.
   d. late night.

9. The author's attitude toward Norman Lear is
   a. envious.
   b. insulting.
   c. admiring.
   d. angry.

10. The author implies that "traditional American values"
   a. should be upheld by TV.
   b. exist only in the Midwest.
   c. are the basis of all sitcoms.
   d. are outdated.

UNIT I: GENERAL INTEREST READING

Reading Efficiency

Like every college student, you face a flood of printed material. You will read not only textbooks but auxiliary materials such as newspapers, magazines, interesting technical articles in your major, and popular fiction. Your problem will be to read everything you need to read and still have free time to read what you want to. Only by learning to read more efficiently can you hope to cope with this problem. The purpose of this book is to teach you to read as efficiently as possible. This is not a text for the substandard reader. It concentrates on guided practice for speed and comprehension. Efficient reading is the ability to analyze your purpose for reading and adjust your techniques accordingly. To read efficiently you must understand the various purposes of reading and the techniques that enhance reading ability.

PURPOSES OF READING

There are four main purposes for which we read. First, we read for a thorough understanding and recall of materials such as textbooks and technical writing. Second, we read for recreation and general information for which thorough recall is not necessary. Third, we skim when we wish to know only the main points. And finally, we rapidly scan material when we wish to locate specific information such as a name or a date. In other words, we do not read the morning newspaper, a magazine article on an interesting subject, or a chapter in a textbook for the same purpose. Likewise, we do not use the same techniques to accomplish each of these purposes. Furthermore, the type of material we are reading can influence our purpose. For example, fiction requires a slower pace if our purpose is to appreciate the author's style. In this text you will find three types of reading: nonfiction articles of general interest, textbook material, and fiction. You will find that your purpose varies according to the type of material you are reading. Depending on the selection, your purpose may even vary within a type. When your purpose changes, your speed will also change.

FACTORS THAT CONTRIBUTE TO READING DIFFICULTY

Four major factors contribute to the difficulty of reading material. The first factor is the difficulty and familiarity of the concepts presented. If the concepts are unfamiliar or difficult, you will have to read at a slower pace in order to comprehend. The second factor is the level of the vocabulary. If the vocabulary used is unfamiliar to you, the material will be harder to understand and comprehension will drop. Third, the complexity of the style will affect the difficulty of the material. Long sentences with many dependent clauses and paragraphs with implied rather than stated main ideas make reading more difficult. The two paragraphs below express the same thoughts in two different styles:

> All that constitutes the vastness of matter is empty space containing relatively elephantine voids in which gyrate with lightning velocity infinitesimally small particles of matter which are so minuscule that they have not been photographed and most certainly elude detection by the naked eye. Though unseen, the existence of these particles was first demonstrated by mathematical physicists and in 1911 one such scientist, Sir Ernest Rutherford, proved and diagramed the structure that we now know is the atom. Due to his efforts and those of Moseley, Bohr, Fermi, A. N. Millikan, Compton, Urey, and others, we now know that this elusive speed demon is the building block of the molecule, and some five million could be placed in a row on a period at the end of a sentence. Though long thought to be the smallest indivisible constituent of matter, we now know that it is composed of several atomic elements including the positively charged proton, the neutrally charged neutron, and the negatively charged electron that orbits the mass formed by the other two.
>
> The atom is the building block of all matter. It is composed of several atomic elements including a proton, a neutron, and an electron. The proton has a positive charge, while the neutron, the other element in the nucleus, has a neutral charge. Around the nucleus spins the electron with its negative charge. The atoms are surrounded by vast amounts of empty space. This space is elephantine compared to the particles, which are so minuscule that they have not been photographed. They certainly cannot be seen by the naked eye. Though unseen, mathematical physicists were able to demonstrate their existence. In 1911 Sir Ernest Rutherford first proved and diagramed the atom. His efforts and those of Moseley, Bohr, Fermi, A. N. Millikan, Compton, Urey, and others have proven that the atom is the building block of the molecule. We now know quite a bit about the atom. For example, we know that five million of them placed in a row would fit on the period at the end of this sentence.

Because the second paragraph is composed of shorter sentences, it is much easier to read. Increasing reading speed would probably cause little drop in comprehension with such a paragraph because the ideas almost jump out at the reader.

The final factor that affects the difficulty of reading is the reader's ability to use key techniques necessary to reading efficiency.

TECHNIQUES FOR READING EFFICIENCY

1. Become an active reader. Many people mistakenly view reading as a passive process of seeing words on a page and gaining whatever understanding emerges through some mysterious and accidental process. Comprehension is not mysterious and it is not accidental. It is based on recognizing the author's main ideas, applying them to the reader's own experience, and evaluating them.

2. Read for ideas. Read for ideas rather than just for words. We think in phrases rather than word by word.

Read the sentence/by groups of ideas/three or four words/at a time.

Phrase reading will increase both speed and comprehension.

3. Adjust your rate to your purpose. There are four basic types of reading: study reading, rapid reading, skimming, and scanning. Each type is suited to a particular type of reading material and reading purpose, and each should be practiced at different speeds.

	Study Reading	Rapid Reading	Skimming	Scanning
Speed	Up to 250 wpm	250–800 wpm	Up to thousands of wpm	Up to thousands of wpm
Purpose	Thorough understanding and recall	Recreation, information, light reading	Survey, overview, review	Locating specific information
Types of Material	Textbooks, technical materials	Newspapers, magazines, novels	Any type	Any type

Use **study reading** on difficult textbook or technical material when your purpose is thorough understanding and/or memorization. Study reading rates usually do not exceed 250 words per minute. Study reading techniques will be discussed in detail later in this book.

Rapid reading should be used when your purpose is to get a general idea of what you read and when the material is not extremely complicated. Types of materials suitable for rapid reading include newspapers, magazines, light nonfiction, and some types of fiction.

Skimming is quickly looking over a selection to get the general idea rather than reading every word. It is used (1) when surveying a chapter or article, (2) when all you need is a general overview instead of careful reading, and (3) when reviewing something you once read to refresh your memory. In the example that follows, you will see only the key words in a short reading selection. If you were skimming, these are the words your eyes would focus on. They are the words necessary for comprehension. Read the words and answer the questions that follow.

vocabulary understanding
interrupting to look up words
concentration broken and speed slowed.
improve vocabulary (1)
using context clues, (2) using
the dictionary, (3) using word parts, and
(4) using "word memory"

1. What is the selection about? ________________
2. What happens when you stop to look up words? ________________

____

3. How many techniques of vocabulary improvement will be discussed? ________________

____

4. List the four ways to improve your vocabulary.

________________ ________________

________________ ________________

The answers are (1) vocabulary improvement, (2) you will break your concentration, (3) four, (4) context clues, dictionary, word parts, and "word memory."

Now read the complete selection below. Would your answers have been any different if you had read the complete selection first?

> A good vocabulary is essential for understanding what you read. If you have to keep interrupting your reading to look up words in the dictionary, your concentration will be broken and your speed will be slowed.
>
> You can improve your vocabulary in four ways: (1) You can become skilled at using context clues, (2) you can become skilled at using the dictionary, (3) you can become skilled at using word parts, and (4) you can become skilled at using "word memory"—practicing some methods to help you remember new words.

Your comprehension of the selection you skimmed depends on your ability to fill in the missing material and your knowledge of the subject.

Scanning is locating specific information, such as a name, a place, or a date. For example, when you look up something in the dictionary or in the telephone book, you are scanning. You run your eyes over the page and read only the information surrounding what you are looking for. You may also use scanning in textbooks—for example, when you are looking for a particular name or date in a chapter.

As a college student you have to read thousands of pages of material. If you read it all at the same pace you will not only waste valuable time, but you probably will never have time to skim a newspaper or enjoy a short story or novel that is not assigned for a class. Never expect to be able to say that you read at a certain number of words per minute. A good reader reads different materials at different speeds according to his or her purpose. So don't be concerned by the fact that you read Shakespeare more slowly than a detective story. Don't be frustrated or feel guilty because you don't read every story in the newspaper or because you have time only to skim it. You are doing the right thing.

4. Preview when relevant. Previewing means taking a few seconds or minutes, depending on the length of what you are about to read, to gain a quick overview of the material. The purpose is to get the main ideas, an idea of the author's organization, and an idea of the difficulty of the material so you can judge at what speed the material can be read to fulfill your purpose. Most nonfiction reading is improved by previewing. You may not want to preview fiction. After all, what good is it to find out who the murderer is in a detective story before you begin to read?

Preview the following article by reading the title, the author's name, all the headings, everything underlined or italicized, and the last paragraph. This should take no longer than 30 seconds.

How to Read Faster

Bill Cosby

WHEN I WAS A KID in Philadelphia, I must have read every comic book ever published. (There were fewer of them then than there are now.)

I zipped through all of them in a couple of days, then reread the good ones until the next issues arrived.

Yes indeed, when I was a kid, the reading game was a snap.

But as I got older, my eyeballs must have slowed down or some-

---

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thing! I mean, comic books started to pile up faster than my brother Russell and I could read them!

It wasn't until much later, when I was getting my doctorate, I realized it wasn't my eyeballs that were to blame. Thank goodness. They're still moving as well as ever.

The problem is, there's too much to read these days, and too little time to read every word of it.

Now, mind you, I still read comic books. In addition to contracts, novels, and newspapers. Screenplays, tax returns and correspondence. Even textbooks about how people read. And which techniques help people read more in less time.

I'll let you in on a little secret. There are hundreds of techniques you could learn to help you read faster. But I know of 3 that are especially good.

And if I can learn them, so can you—and you can put them to use *immediately.*

They are commonsense, practical ways to get the meaning from printed words quickly and efficiently. So you'll have time to enjoy your comic books, have a good laugh with Mark Twain or a good cry with *War and Peace.* Ready?

Okay. The first two ways can help you get through tons of reading material—fast—*without reading every word.*

They'll give you the *overall meaning* of what you're reading. And let you cut out an awful lot of *unnecessary* reading.

1. PREVIEW—IF IT'S LONG AND HARD

Previewing is especially useful for getting a general idea of heavy reading like long magazine or newspaper articles, business reports, and nonfiction books.

It can give you as much as half the comprehension in as little as one tenth the time. For example, you should be able to preview eight or ten 100-page reports in an hour. After previewing, you'll be able to decide which reports (or which *parts* of which reports) are worth a closer look.

Here's how to preview: Read the entire first two paragraphs of whatever you've chosen. Next read only the *first sentence* of each successive paragraph. Then read the entire last two paragraphs.

Previewing doesn't give you all the details. But it does keep you from spending time on things you don't really want—or need—to read.

Notice that previewing gives you a quick, overall view of *long, unfamiliar* material. For short, light reading, there's a better technique.

2. SKIM—IF IT'S SHORT AND SIMPLE

Skimming is a good way to get a general idea of light reading—like popular magazines or the sports and entertainment sections of the paper.

You should be able to skim a weekly popular magazine or the second section of your daily paper in less than *half* the time it takes you to read it now.

Skimming is also a great way to review material you've read before.

Here's how to skim: Think of your eyes as magnets. Force them to move fast. Sweep them across each and every line of type. Pick up *only a few key words in each line.*

Everybody skims differently.

You and I may not pick up exactly the same words when we skim the same piece, but we'll both get a pretty similar idea of what it's all about.

To show you how it works, I circled the words I picked out when I skimmed the following story. Try it. It shouldn't take you more than 10 seconds.

My brother Russell thinks monsters live in our bedroom closet at night. But I told him he is crazy.

"Go and check then," he said.

I didn't want to. Russell said I was chicken.

"Am not," I said.

"Are so," he said.

So I told him the monsters were going to eat him at midnight. He started to cry. My Dad came in and told the monsters to beat it. Then he told us to go to sleep.

"If I hear any more about monsters," he said, "I'll spank you."

We went to sleep fast. And you know something? They never did come back.

Skimming can give you a very good *idea* of this story in about half the words—and in *less* than half the time it'd take to read every word.

So far, you've seen that previewing and skimming can give you a *general idea* about content—fast. But neither technique can promise more than 50 percent comprehension, because you aren't reading all the words. (Nobody gets something for nothing in the reading game.)

To *read faster and understand most*—if not all—of what you read, you need to know a third technique.

3. CLUSTER—TO INCREASE SPEED *AND* COMPREHENSION

Most of us learned to read by looking at each word in a sentence—*one at a time.*

Like this:

My—brother—Russell—thinks—monsters . . .

You probably still read this way sometimes, especially when the words are difficult. Or when the words have an extra-special meaning—as in a poem, a Shakespearean play, or a contract. And that's O.K.

But word-by-word reading is a rotten way to read faster. It actually *cuts down* on your speed.

Clustering trains you to look at *groups* of words instead of one at a time—to increase your speed enormously. For most of us, clustering is a *totally different way of seeing what we read.*

Here's how to cluster: Train your eyes to see *all* the words in clusters of up to 3 or 4 words at a glance.

Here's how I'd cluster the story we just skimmed:

My brother Russell thinks monsters live in our bedroom closet at night. But I told him he is crazy.

"Go and check then," he said.

I didn't want to. Russell said I was chicken.

"Am not," I said.

"Are so," he said.

So I told him the monsters were going to eat him at midnight. He started to cry. My Dad came in and told the monsters to beat it. Then he told us to go to sleep.

"If I hear any more about monsters," he said, "I'll spank you."

We went to sleep fast. And you know something? They never did come back.

Learning to read clusters is not something your eyes do naturally. It takes constant practice.

Here's how to go about it: Pick something light to read. Read it as fast as you can. Concentrate on seeing 3 to 4 words at once rather than one word at a time. Then reread the piece at your normal speed to see what you missed the first time.

Try a second piece. First cluster, then reread to see what you missed in this one.

When you can read in clusters without missing much the first time, your speed has increased. Practice 15 minutes every day and you might pick up the technique in a week or so. (But don't be disappointed if it takes longer. Clustering *everything* takes time and practice.)

So now you have 3 ways to help you read faster. Preview to cut down on unnecessary heavy reading. Skim to get a quick, general idea of light reading. And cluster to increase your speed *and* comprehension.

With enough practice, you'll be able to handle *more* reading at school or work—and at home—*in less time.* You should even have enough time to read your favorite comic books—and *War and Peace*!

Now answer the following questions:

1. What is the main idea of the article? ______________________________

____

2. Is the article written in a technical, textbook style or in an easy, conversational style? ______________________________

3. Can you speed read this article? ______________________________

The answers are:

1. You can learn to read faster.
2. Easy, conversational
3. Yes

Good reading is a skill that develops from practice. Becoming a good reader, like becoming a good swimmer, takes time.

Read this article. Write your starting time here: ________.

1

How to Sell Yourself with a Résumé

Linda Lee Small

YOU CAN SELDOM GET a job interview these days without an advertisement for yourself: a résumé. Here's how to design yours so that a potential employer will be interested enough to call you in for an interview.

TAKE INVENTORY

You can't construct a successful ad if you are not familiar with the product. The first step is to jot down the pertinent facts about youself, *for* yourself. Include education, interests, professional–organizational memberships and, of course, your work history. Remember that you are a lot more than any job title, which is why you should describe the work you did. And don't be myopic: Work can, and should, include volunteer experiences as well.

PICK A FORMAT

You can organize your résumé in several different ways. The format most interviewers are familiar with is the *chronological* résumé, in which you list your experiences in reverse order, starting with your current or most recent position. *Functional* résumés, on the other hand, focus on what you have learned; work-related experiences are organized under skill categories such as "marketing," "administration" or "fund raising."

Which format should you choose? Betsy Niles, director of publications for Catalyst, a women's career-advancement organization, suggests, "If you have had a steady work experience in a field related to the job you are applying for, you should use a chronological format. On the other hand, a functional résumé may be best if there are gaps in your work record, if you are reentering the paid work force, if you are trying to break into a new field or if you've held lots of jobs." Notice all the ifs. In general, functional résumés are just that: "iffy."

If you are using a functional résumé and you have a work history, include it. Employers will want to know where you have worked and

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Linda Lee Small, "How to Sell Yourself with a Résumé," *McCall's*, September 1982, pp. 23–25. Reprinted by permission of Linda Lee Small.

to see some chronology. This combination format, in which company names and dates are included in a separate section, may be a good compromise.

DON'TS

Don't volunteer negative information. For example, if you were fired from your last job, don't feel compelled to include that fact; there will be time enough to discuss it if you get a personal interview. Similarly, there is no need to mention your recent divorce.

Don't include dates if they work against you. Linda Turner, co-owner of LR Consultants, counseling service in Atlanta, Georgia, points out: "An employer looks for stability. If your résumé indicates you worked six months here and three months there, will the employer be impressed or will you be characterized as unstable?" Turner suggests you omit dates if they might be a liability. Instead, you might consider substituting a summary statement—for example, "Over ten years' combined experience in marketing."

Don't list every job you ever had. Linda Kline, co-author of the forthcoming book *Career Changing: The Worry-Free Guide* (Little Brown), advises, "A résumé is not a true-confessions sheet. Leave marginal jobs off. And you don't have to label volunteer work as 'unpaid'—just call it 'work.' "

Don't include personal information. Age, marital status, height, weight and the state of your health have no place on today's résumé.

Don't include hobbies or special interests unless they clearly contribute to your ability to do the job you're applying for. This category mostly just takes up space. One employment counselor points out, "People usually list activities they think someone in that position should be doing, whether *they* can do it or not."

Don't include salary history—even if you are responding to an ad that requests it. You do not want to be restricted by your current salary. You either confront the issue directly at the job interview or state in your covering letter, "My salary history is competitive."

Don't include references. Just add "References furnished upon request" at the bottom of your résumé.

Don't lie. If you get caught in even a small lie, it could wipe out every good thing you have done. You can (and probably would) be fired for false documentation. Be warned: There are verification services whose sole purpose is to verify résumés. (The higher the position the more thoroughly you and your résumé may be examined.)

There is a big difference, of course, between a lie and a slight exaggeration. Everyone expects you to present yourself in the best possible way, and no one is going to fire you because you said you were an "assistant to" when you were really "secretary to." But that's quite different from claiming to have "created and developed the employee compensation package" when in reality you typed it.

Don't be too modest. Janice LaRouche, career counselor in New York City, suggests, "You present facts that will draw the reader to the conclusion that you are terrific." This doesn't mean that you brag. You don't write that you are an "exceptional" manager or a "brilliant" writer. What you *do* write is, "I doubled the profits," or, "won several journalism awards," so that the prospective employer decides you must be terrific. In other words, include the *results* of whatever actions you took. Always look to include information that will help you stand out above everyone else. Linda Turner recalls a teacher who wrote on her résumé: "taught sixth grade for one year." What she neglected to mention was that she had improved the reading score of disadvantaged students by three grades and was asked to train other teachers in her techniques.

DO'S

Do include a job objective. The person who reviews your résumé wants to know what kind of job you are looking for. But avoid vague, meaningless objectives ("a creative position in an expanding company that allows me an opportunity to utilize my creative skills"). Instead, put a job target, or title, in the upper corner. A job target is a work description in a given field that could exist with a number of employers (fund raiser, travel agent, lawyer) and not a specific job opening.

(There is not universal agreement on this point. An advocate for the "other" side argues: "Leave titles out, and let the company decide where you would be best." If you would consider a broad range of jobs—even though most employers prefer specialists, not generalists—omit the objective or title and use your covering letter to explain your goals.)

Do pay attention to language. Most résumés make rather dull reading. Liven it up by using active verbs and short sentences; avoid unnecessary introductory phrases and the excessive use of "I." Also, eliminate repetitions: If you have performed similar tasks in different jobs, explain only the most recent one in detail. Summarize and condense where you can.

Use appropriate language common to your job and industry, or you may come across as an outsider. Most industries do have their own "shorthand." (A nurse would be expected to know how to administer CPR. A legal secretary would be expected to understand what ERA means.) Describe your background with your potential audience in mind, but don't use language to "dress up" or disguise previous positions. Most employers are leery of homemakers who label themselves "money managers" or "family therapists."

Do it yourself. Most experts agree that professionally written résumés are not only not necessary but could be a liability. First of all, they *look* professionally done—which tells your prospective employer that you didn't feel capable of writing it yourself. One well-known service turns out résumés that all look alike. Rarely is the employer impressed by the money you spent. "My eyes just glaze over when I see one of those professionally done jobs," says a recruiter at IBM. In addition, if someone else prepares your résumé, will *you* be able to back it up if you are called in for an interview? If you need assistance, seek out a women's center or career counselor. If you are using an employment agency, someone there should be willing to help you.

Do it again. Another reason for doing your résumé yourself is that you may need to prepare more than one version. Your résumé increases in value if you have created it for a specific job.

Do it perfectly. As Tom Jackson, author of *The Perfect Résumé,* points out, "The résumé does more than describe. By the way it is put together it actually *demonstrates* how you do things." Therefore it should be as close to perfect as possible. Since it is easy to be blind to your own errors, have a rough draft read carefully by someone whose opinion you respect. After testing it in this way, revise it, type the final draft and have it reproduced.

Do keep it short. Try to keep your résumé to one page—but not at all costs. One woman was so concerned about keeping it to one page that she had the print size reduced.

Do keep it conventional. Avoid gimmicks. No folders, no binders, no pictures. Several recruiters admit to secretly saving the "worst" résumés they've ever received: One typed all in capital letters; one made up to look like a "wanted" poster that says, "I am the person you are looking for"; one with a bottle of red fluid attached to it with a note: "Would you like some new blood in your company?"

Do write a covering letter. A résumé should never go out all alone. It should be accompanied by an individually typed letter (not mass-produced) that pinpoints your skills and experiences and relates them to the particular job you seek. It's pointless to work hard on your résumé and then send it out with a sloppy letter—or no letter at all.

1200 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. hiring policies.
   b. types of résumés.
   c. preparing a résumé.
   d. finding a good job.

2. The main idea is that
   a. finding a good job in today's economy is difficult.
   b. companies have different hiring procedures.
   c. knowing how to prepare a good résumé is important.
   d. there are several different types of résumés.

Details

3. Job interviewers are most familiar with
   a. oral résumés.
   b. chronological résumés.
   c. functional résumés.
   d. all types of résumés.

4. The author suggests that your résumé should
   a. include references.
   b. include every job you have had.
   c. include your previous salaries.
   d. omit all of these things.

5. A job objective should
   a. not appear on a good résumé.
   b. be left as vague as possible.
   c. refer to a specific job opening.
   d. be a work description.

6. If you were to lie on a résumé, the author says that you would
   a. probably be hired anyway.
   b. just be doing what everyone else does.
   c. be following the suggestions found in the article.
   d. probably get fired when it is discovered.

Inferences

7. Based on the article, we can infer that
   a. chronological résumés are better than other kinds.
   b. a good résumé can be used to apply for many jobs.
   c. a résumé should overstate your abilities whenever possible.
   d. a good résumé should be changed for each job application.

8. Résumés
   a. should be livened up with an interesting format.
   b. should include everything people find interesting about you.
   c. are impressive if they are several pages long.
   d. offer a visual example of your ability to communicate.

9. When writing a résumé, you should
   a. have it written by a professional writer.
   b. make it stand out visually from those of other applicants by using italic typeface.
   c. use colored or parchment paper to make it look more distinguished.
   d. use a conservative format.

10. Which phrase would the author recommend be included in a résumé for a janitor?
   a. "Director of waste disposal procedures."
   b. "Janitor at six different companies this year."
   c. "Maintenance worker."
   d. "Fired from last job because of personality conflict with my boss."

CRITICAL THINKING QUESTIONS

1. Among the suggestions that the author gives for writing résumés, which might also apply to a job interview?

2. The author makes several suggestions, which, while generally true, may not always be true. For example, when might there be disadvantages to excluding short-term employment or including a specific job objective in a résumé? When might an unconventional format be desirable?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **pertinent** (16)
   a. relevant
   b. unnecessary
   c. strange
   d. minor

2. **myopic** (16)
   a. far sighted
   b. blind
   c. near sighted
   d. careless

3. **format** (17)
   a. interview
   b. organization
   c. idea
   d. experience

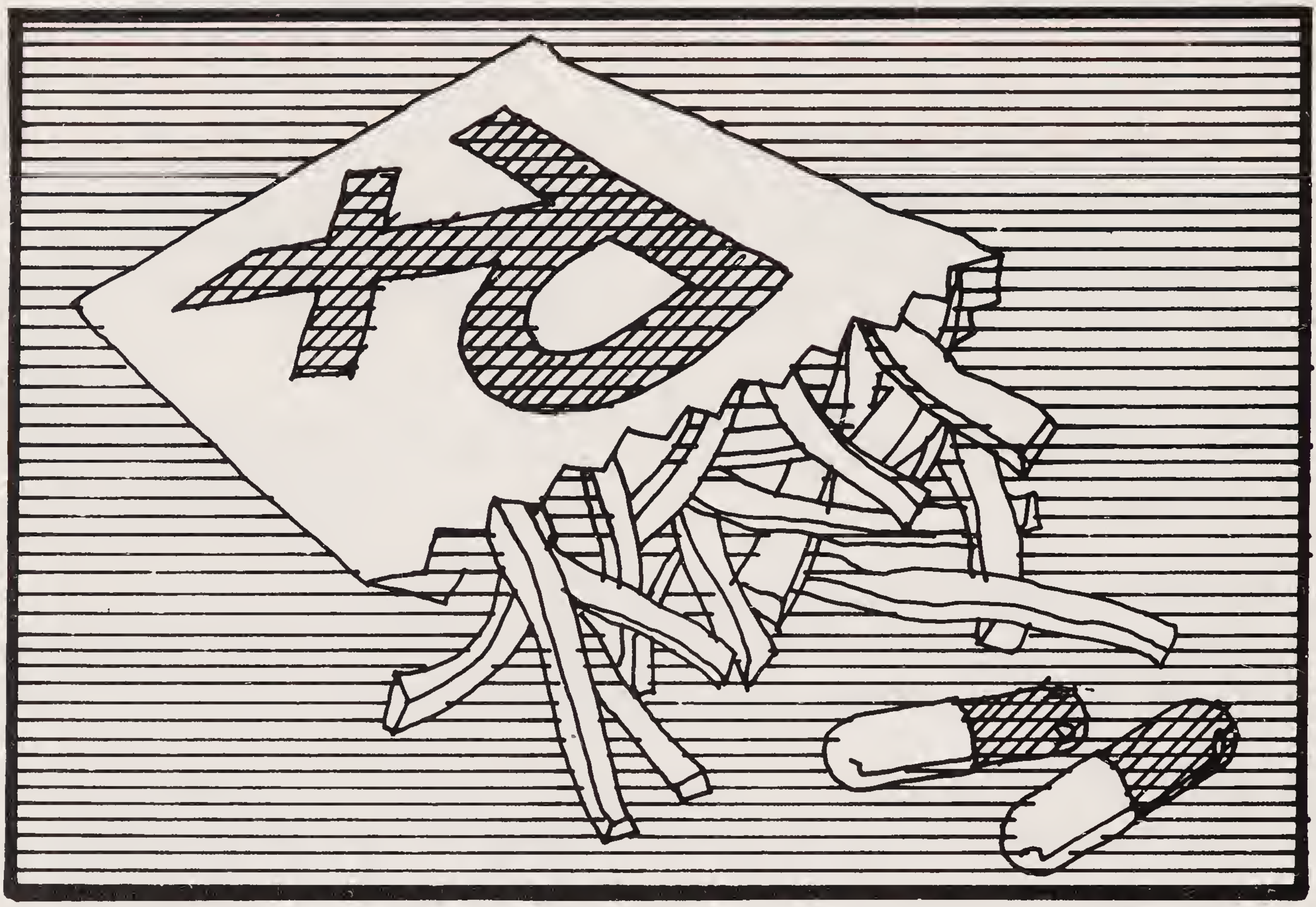
4. **objective** (18)
   a. salary
   b. technique
   c. goal
   d. offer

5. **advocate** (18)
   a. opponent
   b. specialist
   c. employer
   d. spokesperson

Read this article. Write your starting time here: ________.

2

Food and Drugs: Take Only as Directed



DID ANYONE EVER tell you that french fries can help an antifungal medicine cure ringworm faster or that a glass of milk with a *tetracycline* capsule can block the drug's effect?

What, and when, you eat and drink can make a big difference when you're taking medicine, even if it's something as ordinary as aspirin.

The way foods and drugs act on each other can determine whether a drug does what it's supposed to do or alters the nourishment you get from what you eat.

Even the liquid you use to wash down a pill, capsule, or tablet can change the way it works. Using whatever's on hand, whether it's fruit juice, milk or a soft drink, may cause problems with some drugs.

Plain water is the best and safest choice. It's even better if you drink a whole glassful instead of just a swallow or two. The liquid helps the body absorb the drug so you get the full effect. This is especially important with antibiotics like *erythromycin*.

From *Current Health* 2, May 1982. © 1982 by Curriculum Innovations, Inc. Reprinted with permission. Further reproduction prohibited.

A full glass of water will also help with a drug like aspirin, which tends to irritate the stomach lining. With so much liquid in the stomach, the drug dissolves faster and the watery solution is less irritating than drug particles in the stomach.

It's better not to use soft drinks, fruit and vegetable juices, tea, or coffee to wash down your medicines. They tend to increase acidity in the stomach, and this may cause some drugs to dissolve before they reach the intestine, where most absorption takes place.

Just one exception: If you take an iron supplement with juice that's high in vitamin C, the vitamin helps the body absorb more of the iron.

Milk's a help with some drugs and a handicap with others. Because milk is alkaline, it helps neutralize stomach acid, and this is useful with some drugs that can cause stomach upset, such as aspirin and the *theophylline* compounds used to treat asthma (brand names include Marax and Bronkotabs).

Milk's the wrong thing, though, if you're taking enteric aspirin, or any other drug with an enteric coating. The coating is designed to keep the drug from dissolving until it reaches the small intestine. Milk will dissolve this coating and expose the drug to stomach acid.

Milk and antacid tablets should both be avoided for two hours before and after a dose of tetracycline. The calcium in milk, yogurt, and other milk products reacts with tetracycline to form a compound the body can't absorb. Antacids like Tums and Maalox usually contain calcium or magnesium or aluminum, which combine with tetracycline the same way.

What about food? Most drugs, including tetracycline and other antibiotics, should be taken on an empty stomach. This means at least one hour before a meal or two hours afterward.

There are several reasons. Food slows the movement of the drug to the intestine, where most absorption occurs. Digestive juices can affect drugs that are unstable in acid. And fat in food can delay the absorption of drugs that are soluble in water.

Certain drugs are usually taken at mealtimes, however. Some are drugs that are irritating on an empty stomach. The list includes pain relievers like Darvon, anti-asthmatic drugs with theophylline, iron preparations, and flagyl, which is used for some infections.

Some others simply work better if they're taken with food. One of them is *griseofulvin*, which is prescribed for ringworm and other fungus infections. It's fat soluble, and works best if your meal includes some high-fat foods like french fries, fried chicken, mayonnaise, peanut butter, or whipped cream. This drug offers a good excuse to indulge in rich foods you might normally try to avoid.

Most food and drug interactions don't turn out that well. Many foods contain substances that combine with specific drugs either to make the drug less effective or to cause hazardous side effects.

One of the most dangerous of these interactions occurs with a group of drugs called monoamine oxidase, or MAO, inhibitors which are sometimes prescribed for depression. Brand names include Marplan, Nardil, and Parnate. Anyone taking one of these drugs must avoid bananas, aged cheeses, chicken livers, Chianti wine, soy sauce, yogurt, and a number of other foods. All of these foods contain a substance called tyramine. In combination with an MAO inhibitor, tyramine will push blood pressure up to dangerous levels and may cause severe headaches, brain hemorrhage, and even death. Other drugs more commonly used to treat depression don't have these hazardous effects.

Cabbage, Brussels sprouts, cauliflower, soy bean products, and some other vegetables contain chemicals known as goitrogens, which inhibit the production of thyroid hormones. For someone with a weak thyroid gland, this might produce a goiter. Medical authorities suggest that anyone taking thyroid hormones should use caution in eating these foods.

Charcoal broiled hamburgers, steaks, and other foods can make theophylline compounds less effective in the treatment of asthma. Charcoal broiled foods, as well as Brussels sprouts and cabbage, contain a substance that reduces the absorption of *phenacetin,* an ingredient in several pain relievers, including APC.

Even a licorice habit may cause a troublesome food and drug interaction. Licorice from natural sources has a substance that can push up blood pressure levels if it's eaten regularly in large amounts. This could also reduce the effectiveness of a medication for high blood pressure. Most manufacturers in the United States now use synthetic licorice flavoring in candy and medicinal products, but many imported products still are made with natural licorice.

Alcohol and many drugs, from antidepressants and antihistamines to tranquilizers and time-release capsules, are a dangerous combination. It's best to avoid alcohol if you're taking any prescription drug or over-the-counter remedy.

Used with aspirin and related pain relievers, alcohol makes the stomach lining more sensitive to irritation. Combined with the acetaminophen in Tylenol and similar drugs, prolonged use can lead to liver damage.

In combination with antihistamines, tranquilizers, sedatives, or barbiturates, alcohol affects both mental alertness and physical coordination. Tasks that require concentration are likely to be more difficult. Driving is extremely dangerous.

With a number of other drugs, alcohol will result in headaches, nausea, vomiting, and stomach cramps. The symptoms are similar to those of Antabuse, the anti-alcohol drug.

Even time-release capsules can be risky, Joe Graedon writes in *The People's Pharmacy 2*. In some cases the outer covering may be soluble in alcohol, he notes, with the result that the tiny time pills which should be released over eight or 12 hours can become one big dose, and may be toxic.

But just as foods can change the action of some drugs, certain drugs can change the body's needs for some nutrients.

Dilantin and some other drugs for controlling epilepsy can interfere with vitamin absorption if they are taken regularly over a period of time. The physician may prescribe a vitamin supplement to take care of this.

An antibiotic may sometimes cause diarrhea which will cut down the absorption of nutrients from the intestine. This happens when the drug inhibits the normal organisms in the digestive tract. The problem should be reported to the physician; it usually clears up with a change of the dosage of the drug.

The study of food and drug interactions is a new and growing field, and much of what is now known has come from complaints by patients and observations by doctors.

Interactions of foods and drugs aren't always predictable. They depend not only on the drug and the dosage, but on the age, size, and physical condition of the patient, as well as the patient's diet.

You can help yourself get the most benefit from medicine by following some simple rules.

Eat a varied diet to make sure you get all the nutrients your body needs. Vitamins and minerals from food are less likely to cause a reaction than the synthetic supplements.

Read the label on a non-prescription drug or the patient information insert with a prescription drug as well as follow your doctor's instructions.

Ask the physician or the pharmacist to explain anything you don't understand. Should you take the drug with meals or not? Are there certain foods you should avoid? What's meant by taking it "three times a day"?

Then follow the instructions. It's your medicine. You're the person who can really make it work.

1400 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   - a. the interaction of food and drugs.
   - b. the dangers of prescription drugs.
   - c. methods of preventing drug reactions.
   - d. drugs that should be avoided.
2. The main idea is that
   - a. the public is ignorant of food–drug interactions.
   - b. eating a varied diet is the best way to prevent bad reactions from the interaction of food and drugs.
   - c. the way a food and a drug act on each other can change the effect of the drug or the value of the food.
   - d. you should avoid using prescription drugs whenever possible.

Details

3. It's usually good to drink water when you take a drug because
   - a. water helps the body absorb the drug.
   - b. water reduces stomach irritation from some drugs.
   - c. water is less likely than juice or milk to interact with the drug.
   - d. all of the above are true.
4. Most drugs should be taken
   - a. with vitamins.
   - b. at mealtimes.
   - c. on an empty stomach.
   - d. with a snack.
5. Taking drugs with food
   - a. slows down absorption.
   - b. speeds up the effect of the drug.
   - c. lines the stomach with a protective coating.
   - d. prevents nausea.
6. Taking milk with drugs is
   - a. good.
   - b. bad.
   - c. sometimes good, sometimes bad.
   - d. none of the above.

Inferences

7. The main reason for knowing about interactions between food and drugs is that
    a. you can decrease the effects of drugs by eating or drinking the wrong things.
    b. you can suffer malnutrition as a result of taking some drugs.
    c. some food–drug combinations can irritate the stomach lining.
    d. ignorance of food–drug interactions can be life threatening.

8. The author implies that
    a. doctors have an obligation to inform patients of food–drug interactions.
    b. drug companies should inform patients about food–drug interactions.
    c. patients taking drugs should inform themselves about food–drug interactions.
    d. all of the above are true.

9. The author implies that
    a. most people are ignorant of food–drug interactions.
    b. people don't bother to read labels on medicines.
    c. most people have inadequate diets.
    d. obtaining the information you need is fairly simple.

10. The author implies that
    a. many facts about food–drug interactions are concealed by drug companies.
    b. doctors don't want to tell patients the facts about food–drug interactions.
    c. many facts about food–drug interactions are still unknown.
    d. pharmacists are unwilling to discuss the effects of the drugs they sell.

CRITICAL THINKING QUESTIONS

1. What legal responsibility for explaining food–drug interactions should belong to manufacturers of prescription and over-the-counter drugs?

2. What are the pros and cons of expecting doctors to fully explain the interactions between foods and the drugs they prescribe?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **enteric** (23)
   a. of the intestine
   b. of the liver
   c. of the heart
   d. of the lungs
2. **soluble** (23)
   a. can be eaten
   b. can be melted
   c. can be burnt
   d. can be dissolved
3. **inhibitors** (24)
   a. substances that increase or intensify a reaction
   b. substances that speed up a reaction
   c. substances that slow or prevent a reaction
   d. substances that cause a reaction between two or more other substances
4. **toxic** (25)
   a. nutritious
   b. poisonous
   c. indigestible
   d. unappetizing
5. **nutrients** (25)
   a. minerals
   b. vitamins
   c. nourishments
   d. calories

Read this article. Write your starting time here: ________.

3

Investigating Large Numbers

Karl J. Smith

WE HAVE BEEN LOOKING at some very large numbers. But just how large is large? Most of us are accustomed to hearing about millions and even billions, but do we really understand the magnitude of these numbers?

A million is a fairly modest number, 10^6. Yet if we were to count one number per second, nonstop, it would take us about 278 hours or approximately 11½ days to count to a million. Not a million days have elapsed since the birth of Christ (a million days is about 2700 years). A million letters in small type would fill a book of about 700 pages. A million bottle caps placed in one line would stretch about 17 miles.

But the age in which we live has been called the age of billions. The U.S. national budget is measured in terms of billions of dollars (soon it will be a trillion-dollar budget). Just how large is a billion? How long would it take you to count to a billion? To get some idea about how large a billion is, let's compare it to some familiar units.

a. Suppose you give away $1000 every day. It would take more than 2700 years to give away a billion dollars.

b. A stack of a billion $1 bills would be more than 59 miles high.

c. At 8% interest, a billion dollars would earn you $219,178.08 interest per day.

d. A billion seconds ago was the bombing of Pearl Harbor.

e. A billion minutes ago Christ was living on Earth.

f. A billion hours ago people had not yet appeared on Earth.

But a billion is only 10^9, a mere nothing compared with the real giants. There is an old story of a king who, being under obligation to one of his subjects, offered to reward him in any way the subject desired. Being of mathematical mind and modest tastes, the subject

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Karl J. Smith, "Early Numeration Systems," in *The Nature of Modern Mathematics*, Third Edition (Monterey, CA: Brooks/Cole Publishing Co., 1980), pp. 36–39. Reprinted by permission.

simply asked for a chessboard with one grain of wheat on the first square, two on the second, four on the third, and so forth. The old king was delighted with this request because he had a beautiful daughter and had feared the subject would ask for her hand in marriage. However, the king was soon sorry he had granted the request. He needed 2^{63} grains of wheat for the last square alone! Now,

$$2^{63} = 9{,}223{,}372{,}036{,}854{,}775{,}808.$$

If we purchase some raw wheat and count the number of grains in one cubic inch, we find that there are about 250 grains per cubic inch. We can then compute (using scientific notation) the amount of wheat needed to equal 2^{63} grains. There are 2150 cubic inches per bushel, or 537,500 grains of wheat in a bushel. This means that 2^{63} grains of wheat would equal about 17,383,000,000,000 bushels. For the last several years, the yearly output of wheat in the United States has been about 1.25 billion bushels. At this rate of production, it would take the United States almost 14,000 years to satisfy the requirements for the last square of the chessboard! The story goes no further. The chances are that the king lost his temper and the subject lost his head before the 64th square of the chessboard was reached.

Let's consider a real giant. The largest possible number using only three digits is 9^{9^9} (certainly larger than 999). Now, 9^{9^9} means $9^{(9^9)}$ or 9 raised to the 9^9 power. Now, $9^9 = 387{,}420{,}489$; thus, $9^{9^9} = 9^{387{,}420{,}489}$. To compare this with the "little" number from the chessboard problem, 2^{63}, realize that $9^{387{,}420{,}489}$ is greater (a lot greater) than $8^{387{,}420{,}489} = (2^3)^{387{,}420{,}489} = 2^{1{,}162{,}261{,}467}$, which makes our big number 2^{63} look minuscule.

Some Large Numbers

million: 1,000,000
billion: 1,000,000,000
trillion: 1,000,000,000,000
quadrillion: 1,000,000,000,000,000
quintillion: 1,000,000,000,000,000,000
sextillion: 1,000,000,000,000,000,000,000
septillion: 1,000,000,000,000,000,000,000,000
octillion: 1,000,000,000,000,000,000,000,000,000
nonillion: 1,000,000,000,000,000,000,000,000,000,000
decillion: 1,000,000,000,000,000,000,000,000,000,000,000
undecillion: 1,000,000,000,000,000,000,000,000,000,000,000,000
⋮
vigintillion: 1,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000

The number 9^{9^9} would take 6 million lines to write. It has 369,693,100 digits, and it begins 428,124,773, . . . and ends with 89. That number of bacteria would overflow the Milky Way, and the number of grains of sand of this and every other planet in our solar system would not be so large as this giant.

For every large number, there is a corresponding small number. If 9^{9^9} is very large, then $1/9^{9^9}$ is very small. Therefore, when we speak of finding large numbers, we are also finding small numbers.

We have been looking at some very large (and very small) numbers, but there are yet larger numbers. Professor Edward Kasner of Columbia University named the "googol" and "googolplex." A googol is 10^{100}, and a googolplex is 10^{googol}. Thus, a googol is 1 followed by 100 zeros. It has been estimated that, if we tried to write out a googolplex on a single line with a typewriter, it would not fit between the earth and the moon.

Have we reached a limit? Are there still larger numbers? What about the following numbers?

$$\text{googol}^{\text{googol}} \qquad \text{or} \qquad \text{googol}^{\text{googol}^{\text{googol}}}$$

These are real giants. Is there a largest number? Clearly not, since, if you think you've found the largest number, you would only have to add 1 to have a larger number.

900 words

Write your ending time here: ______________________

Subtract your starting time: ______________________

Total time: ______________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter of the best answer to each question. Do not look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. the quantities represented by large numbers.
   b. the size of a googol.
   c. working with infinite numbers.
   d. the modern numerical system.

2. The main idea is that
   a. the modern numerical system is very complex.
   b. a googol is a very large number.
   c. it is difficult to picture how large large numbers are.
   d. infinite numbers are limitless in size.

Details

3. Which number is larger?
   a. A septillion
   b. A nonillion
   c. An undecillion
   d. A googol

4. The largest number in the world is called
   a. a googolplex.
   b. a vigintillion.
   c. a googol.
   d. there is no name.

5. Trying to give a billion dollars away at one thousand dollars a day would take
   a. twenty years.
   b. over 2700 years.
   c. a lifetime.
   d. till the twenty-first century.

6. 9^{99} means
   a. nine to the 99th power.
   b. nine hundred ninety-nine.
   c. nine billion nine hundred thousand nine hundred and ninety-nine.
   d. the same as a googolplex.

Inferences

7. The story of the king and the wheat showed that the king
   a. was very greedy.
   b. was very rich.
   c. did not realize how rapidly numbers could increase.
   d. thought more of the wheat than of his daughter's happiness.

8. From the article we can infer that
   a. the average book contains about one million words.
   b. people relate better to concrete demonstrations of the size of numbers than to abstract explanations.
   c. time moves fast.
   d. most people realize how large a billion is.

9. From the article we can infer that
   a. Professor Kasner is a scientist working in space research.
   b. Professor Kasner has been working with very large amounts of money.
   c. Professor Kasner needed to devise a very large number to describe his mathematical theories.
   d. most mathematical texts will soon include work with googols.

10. From the article we can infer that
    a. the children of the twenty-first century will add and subtract in googolplexes.
    b. no one has ever written out a googolplex.
    c. we will soon be talking about the gross national product in googols.
    d. all of the above.

CRITICAL THINKING QUESTIONS

1. Compute the monthly interest payment at 10 percent simple interest on one trillion dollars, currently about twice the national debt. If people understood the enormity of large numbers, how might they feel differently about such issues as the national debt and government spending?

2. An aboriginal tribe counts: "1, 2, 3, and many." (They have no numbers higher than 3.) What is the relation between the needs of a society and the size of the numbers they use? At what point do the numbers in our system become too large to make sense to you?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **magnitude** (29)
   a. greatness of size
   b. importance
   c. shape
   d. degree of magnification
2. **modest** (29)
   a. too small to be counted
   b. unusual
   c. not very large
   d. hidden
3. **power** (30)
   a. square root
   b. a number times itself so many times
   c. a product in multiplication
   d. a number expressed as a decimal
4. **minuscule** (30)
   a. tiny
   b. enormous
   c. negative
   d. subtracted
5. **finite** (31)
   a. huge
   b. tiny
   c. without end
   d. limited

Read this article. Write your starting time here: ________.

4

How to Enjoy Poetry

James Dickey

WHAT IS POETRY? And why has it been around so long? Many have suspected that it was invented as a school subject, because you have to take exams on it. But that is not what poetry is or why it is still around. That's not what it feels like, either. When you really feel it, a new part of you happens, or an old part is renewed, with surprise and delight at being what it is.

Where poetry is coming from

From the beginning, men have known that words and things, words and actions, words and feelings, go together, and that they can go together in thousands of different ways, according to who is using them. Some ways go shallow, and some go deep.

Your connection with other imaginations

The first thing to understand about poetry is that it comes to you from outside you, in books or in words, but that for it to live, something from within you must come to it and meet it and complete it. Your response with your own mind and body and memory and emotions gives the poem its ability to work its magic; if you give to it, it will give to you, and give plenty.

When you read, don't let the poet write down to you; read up to him. Reach for him from your gut out, and the heart and muscles will come into it, too.

Which sun? Whose stars?

The sun is new every day, the ancient philosopher Heraclitus said. The sun of poetry is new every day, too, because it is seen in different ways by different people who have lived under it, lived with it, responded to it. Their lives are different from yours, but by means of the special spell that poetry brings to the *fact* of the sun—everybody's sun; yours, too—you can come into possession of many suns: as many as men and women have ever been able to imagine. Poetry makes possible the deepest kind of personal possession of the world.

By permission of International Paper Company, 1982.

The most beautiful constellation in the winter sky is Orion, which ancient poets thought looked like a hunter, up there, moving across heaven with his dog Sirius. What is this hunter made out of stars hunting for? What does he mean? Who owns him, if anybody? The poet Aldous Huxley felt that he did, and so, in Aldous Huxley's universe of personal emotion, he did.

Up from among the emblems of the wind into its heart of power,
The Huntsman climbs, and all his living stars
Are bright, and all are mine.

Where to start

The beginning of your true encounter with poetry should be simple. It should bypass all classrooms, all textbooks, courses, examinations, and libraries and go straight to the things that make your own existence exist: to your body and nerves and blood and muscles. Find your own way—a secret way that just maybe you don't know yet—to open yourself as wide as you can and as deep as you can to the moment, the *now* of your own existence and the endless mystery of it, and perhaps at the same time to one other thing that is not you, but is out there: a handful of gravel is a good place to start. So is an ice cube—what more mysterious and beautiful *interior* of something has there ever been?

As for me, I like the sun, the source of all living things, and on certain days very good-feeling, too. "Start with the sun," D. H. Lawrence said, "and everything will slowly, slowly happen." Good advice. And a lot *will* happen.

What is more fascinating than a rock, if you really feel it and *look* at it, or more interesting than a leaf?

Horses, I mean; butterflies, whales;
Mosses, and stars; and gravelly
Rivers, and fruit.

Oceans, I mean; black valleys; corn;
Brambles, and cliffs; rock, dirt, dust, ice . . .

Go back and read this list—it is quite a list, Mark Van Doren's list!—item by item. Slowly. Let each of these things call up an image out of your own life.

Think and feel. What moss do you see? Which horse? What field of corn? What brambles are *your* brambles? Which river is most yours?

The poem's way of going

Part of the spell of poetry is in the rhythm of language, used by poets who understand how powerful a factor rhythm can be, how compelling and unforgettable. Almost anything put into rhythm and rhyme is more memorable than the same thing said in prose. Why this is, no one knows completely, though the answer is surely rooted far down in the biology by means of which we exist; in the circulation of the blood that goes forth from the heart and comes back, and in the repetition of breathing. Croesus was a rich Greek king, back in the sixth century before Christ, but this tombstone was not his:

No Croesus lies in the grave you see;
I was a poor laborer, and this suits me.

That is plain-spoken and definitive. You believe it, and the rhyme helps you believe it and keep it.

Some things you'll find out

Writing poetry is a lot like a contest with yourself, and if you like sports and games and competitions of all kinds, you might like to try writing some. Why not?

The possibilities of rhyme are great. Some of the best fun is in making up your own limericks. There's no reason you can't invent limericks about anything that comes to your mind. No reason. Try it.

The problem is to find three words that rhyme and fit into a meaning. "There was a young man from . . ." *Where* was he from? What situation was he in? How can these things fit into the limerick form—a form everybody knows—so that the rhymes "pay off," and give that sense of completion and inevitability that is so deliciously memorable that nothing else is like it?

How it goes with you

The more your encounter with poetry deepens, the more your experience of your own life will deepen, and you will begin to see things by means of words, and words by means of things.

You will come to understand the world as it interacts with words, as it can be re-created by words, by rhythms and by images.

You'll understand that this condition is one charged with vital possibilities. You will pick up meaning more quickly—and you will *create* meaning, too, for yourself and for others.

Connections between things will exist for you in ways that they never did before. They will shine with unexpectedness, wide-openness, and you will go toward them, on your own path. "Then . . ." as Dante says, ". . . Then will your feet be filled with good desire." You will know this is happening the first time you say, of something you never would have noticed before, "Well, would you look at *that*! Who'd 'a thunk it?" (Pause, full of new light)

"*I* thunk it!"

James Dickey

1200 words

Write your ending time here: ______________________

Subtract your starting time: ______________________

Total time: ______________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. writing poetry.
   b. types of poetry.
   c. poetry appreciation.
   d. the study of poetry.

2. The main idea is that poetry
   a. is a form of communication.
   b. can enrich your life.
   c. begins with observation.
   d. is always new.

Details

3. Poetry is constantly new because
   a. beauty never grows old.
   b. some things can never be said too often.
   c. it deals with universal truths.
   d. people bring to it their personal experiences.

4. The author suggests beginning by
   a. experiencing an object.
   b. taking a poetry course.
   c. reading great poets.
   d. writing down your feelings.

5. The author feels that
   a. you get out of poetry what you put in.
   b. an understanding of meter and rhyme scheme will aid your appreciation of poetry.
   c. you should check your library for a good anthology of poems.
   d. listening to poetry on records is helpful.

6. The rhythm of a poem helps you
   a. remember it.
   b. understand the author's meaning.
   c. relate it to your personal experience.
   d. understand the personality of the poet.

Inferences

7. The *main* reason to experience poetry is that it will
   a. help you become an educated person.
   b. make your life more interesting.
   c. help you appreciate language.
   d. help you appreciate art and music.

8. The author implies that people who like poetry are
    a. less likely than others to be bored and boring.
    b. more aware of their own feelings.
    c. more aware of the world around them.
    d. all of the above.

9. The author implies that
    a. everyone can learn to appreciate poetry.
    b. some people are more naturally sensitive to art than others are.
    c. very few people can write poetry.
    d. people who like music also like poetry.

10. People have probably appreciated poetry
    a. all through human history.
    b. in every culture.
    c. at all levels of literacy.
    d. all of the above.

CRITICAL THINKING QUESTIONS

1. What does the Aldous Huxley poem in the article mean?

2. Describe an image from your own life called forth by one of the images in Mark Van Doren's list.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **philosopher** (35)
    a. one who studies linguistics
    b. one who collects stamps
    c. one who studies life
    d. one who warred with the Israelites

2. **compelling** (36)
    a. weak
    b. forceful
    c. illegal
    d. expensive

3. **definitive** (37)
    a. synonymous
    b. accurate
    c. certain
    d. original

4. **limerick** (37)
    a. five-line nonsense poem
    b. fourteen-line poem on a single idea
    c. poem intended to be sung
    d. lyric poem

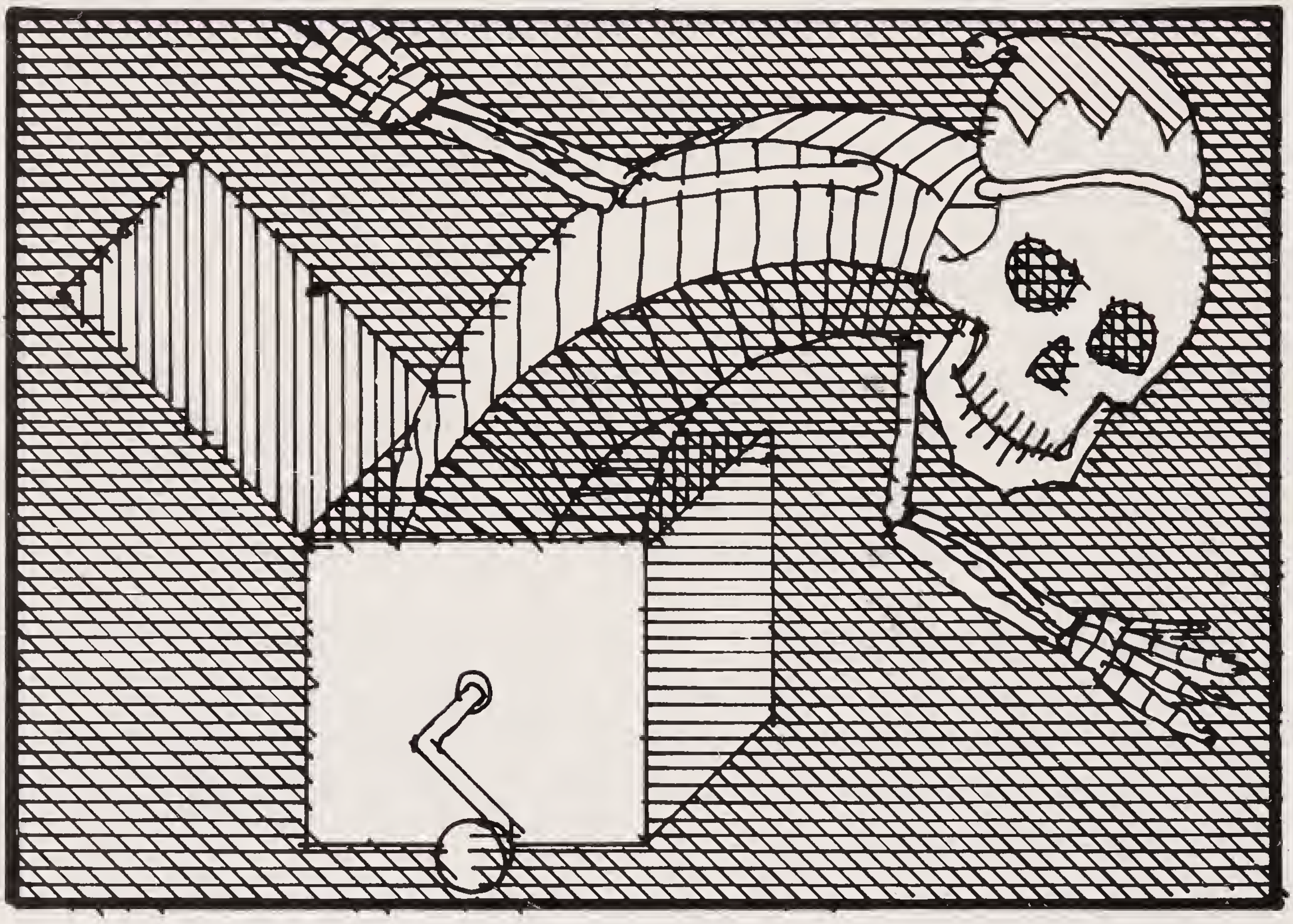
5. **inevitability** (37)
    a. proof
    b. changeableness
    c. unavoidability
    d. permanence

Read this article. Write your starting time here: ________.

5

Alfred Hitchcock: Unforgettable Master of the Macabre

John Culhane



ALFRED HITCHCOCK resembled a gargoyle on a medieval cathedral, looking down with wry amusement on the modern city below. His double chin, pouting mouth and puckish eyes came into play on his naughty cherub's face as he answered questions. Why, for example, did he no longer use a certain actress?

"The difference between *ack-tors* and *die-wreck-tors* is . . .," he began, in his lugubrious tone, then paused and blinked. "*Ack-tors* stand on the side of the camera where the passage of time usually *hurts.*" Long pause and pout. "*Whereas die-wreck-tors* can stay on the side where it *may help.*"

Time certainly helped Hitchcock. He stayed at the top of his profession from *The Thirty-Nine Steps* in 1935 until his death last April 29 at the age of 80, becoming a multimillionaire and living to see

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John Culhane, "Alfred Hitchcock: Unforgettable Master of the Macabre." Reprinted with permission from the February 1981 *Reader's Digest*. Copyright © 1981 by The Reader's Digest Assn., Inc.

the greater portion of his 54 films achieve critical as well as popular success.

When I first interviewed Hitchcock, I was disconcerted by his long pauses while he was answering questions. But I realized afterward that when you answer a question you end the suspense—and Hitchcock always hated to end the suspense.

According to Hitchcock, his power to create suspense had its roots in childhood anxieties. It began when a father sent his five-year-old son down the street to the police station with a note. The chief of police read the note and locked the boy in a jail cell. Five minutes later, the jailer let the child out and sent him home with these words: "That's what we do to naughty little boys."

Alfred Hitchcock told that story throughout his life. He insisted that he was that little boy and that he could never forget "the sound and the solidity of that clanging cell door and the bolt."

FEAR AND FROLIC

Almost all of Hitchcock's best pictures lock us in a cell for several minutes with some of our worst fears: of heights, in *Vertigo*; of falling, in *North by Northwest*; of hurtling down a road in a car whose brakes have failed, in *Family Plot*. In the end he lets us off, as if warning: "That's what we do to naughty little boys and girls."

"I usually have the theme of the innocent person who is in danger," Hitchcock told me. "Then I build up the suspense—will he get caught, will he escape, will he get killed? It is sometimes said that I make mysteries, but you make a mystery by withholding information, which I rarely do. I create suspense by *giving* information to the audience that makes them worry."

After a certain amount of suspense, however, Hitchcock would give the audience relief in laughter. The entire harrowing rescue of their son by Doris Day and James Stewart in *The Man Who Knew Too Much* takes place while another couple waits for them at their hotel for a social engagement. When the reunited family finally returns, Stewart says casually to his neglected guests: "Sorry we were gone so long. We had to go over and pick up Hank."

Since 1926, each of his films included a cameo appearance of Hitchcock himself. By the late 1940s, his fame was so great that he had to make his appearance early or the audience would be distracted looking for him instead of losing themselves in the action. "Hitch," as his friends called him, was shaped like a larger member of the violin family, and he took advantage of this, appearing with a cello case in *The Paradine Case* and boarding a railroad car carrying a double bass in *Strangers on a Train.*

The most difficult picture to get himself into was *Lifeboat,* because every scene had the same few people in the boat in the middle of the ocean. His first notion was to film himself as a dead body floating past the lifeboat, but he was afraid he'd sink. Hitchcock's solution was to show himself in an ad in an old newspaper found on the boat. The ad was for a fictitious diet drug called "Reduco." It showed "before" and "after" photographs of Hitchcock, who had just dieted from 300 to 200 pounds in real life. When the film came out, Hitchcock was deluged with letters asking where to get "Reduco."

His television series, "Alfred Hitchcock Presents," increased his fame. In the weekly show telecast between 1955 and 1965, Hitchcock's line drawing of his own profile would appear on the screen and then, to the macabre lilt of Gounod's "Funeral March of a Marionette," Hitchcock would match his own profile to that of his caricature, turn to the camera and say, "Gooood evening." Viewers loved the stories and delighted in Hitchcock's kidding his sponsors: "As you can see, crime does not pay—even on television. You have to have a sponsor. Here's ours, after which I shall return."

CALIFORNIA BOUND

Born in London on August 13, 1899, the son of William Hitchcock, a successful greengrocer, and Emma Whelan Hitchcock, young Alfred received what he later described as "a strict religious upbringing." He attended St. Ignatius', a Jesuit secondary school in London, where the priests maintained order through corporal punishment. Disobedient boys were hit on the hands with a hard rubber cane. To add psychological distress, the boys had to choose their punishment time: morning break, lunch time, end of the day. Hitchcock noticed that most put it off as long as possible—keeping themselves in suspense all day long. Once, when young Alfred finally held out his hands, the priest gave them a light tap. Thus Hitchcock found that suspense can have a surprise ending.

Later, he included in his films scenes in which the anticipated ill does not materialize—and an unanticipated ill does. In *Rear Window,* when Grace Kelly hunts for clues in the apartment of Raymond Burr, she is caught by the murderer, and then saved by the police—who arrest her as a burglar.

Hitchcock's father died when Alfred was 14. The boy quit St. Ignatius' and, after studying mechanical drawing at an engineering and navigation school, he became a technical clerk at Henley's, an electrical cable company. For pleasure, he took a course in drawing and sketching, and by his 20th birthday, his artistic talent had taken him to Henley's advertising department. When he read that an American movie company, Famous Players-Lasky (later Paramount), was opening a studio in London, he drew up a portfolio of designs for silent-film titles and won a job writing and illustrating them.

The first complete film that Hitchcock directed was *The Pleasure Garden*, a murder melodrama made for Gainsborough Pictures in 1925. His assistant director was a young English film editor named Alma Reville. In 1926, she became Mrs. Alfred Hitchcock. Over the 53 years of their marriage—in addition to raising their daughter, Patricia—Alma provided screenplays, adaptations and continuity for many of her husband's best films.

Hitchcock went on to direct the first British sound film, *Blackmail*, in 1929, and his British films of international intrigue of the '30s—*The Thirty-Nine Steps, The Secret Agent, Sabotage* and *The Lady Vanishes*—made him world-famous.

David O. Selznick brought Hitchcock to Hollywood where his first American production, *Rebecca*, with Laurence Olivier and Joan Fontaine, won the Oscar for Best Picture of 1940. He was nominated for best director five times—for *Rebecca, Lifeboat* (1944), *Spellbound* (1945), *Rear Window* (1954) and *Psycho* (1960)—but he never won an Oscar. When the American Film Institute gave him its Life Achievement Award in 1978, it may have been with some stored-up resentment that Hitchcock, in accepting it, intoned: "Man does not live by murder alone. He needs affection, approval, encouragement and, occasionally, a hearty meal."

ARTISTIC PERFECTION

It is true that for years audiences—including critics—were too busy being entertained to realize that Hitchcock was also one of the greatest artists at telling a story in a *movie* way, that is, almost completely with pictures in motion. Cary Grant carries a glass of milk upstairs to Joan Fontaine in *Suspicion*. Is the milk poisoned? Hitchcock hides a light in the glass to make the milk glow and, even though it turns out that the milk isn't poisoned, the glow makes the very glass look guilty.

Hitchcock planned virtually every shot, drawing it for a story board that looked like a comic strip. The famous scene in *North by Northwest*, in which Cary Grant is attacked by a low-flying crop-duster amid a shelterless stretch of fallow Indiana fields, was all drawn on the story board and played by Grant shot-for-shot—running and falling and rising and running some more. In the shower sequence in *Psycho*, there were 78 separate shots—all sketched in advance—for that 45-second scene. "When Hitch got his finished script," said Anthony Shaffer, who wrote the screenplay for *Frenzy*, "he considered the picture 99-percent finished. But, of course, he still had to shoot it."

Hitchcock's meticulous approach to film-making extended to the preparation of the musical score after the film had been shot and edited. When Hitchcock hired composer Ron Goodwin for *Frenzy*, the director was so specific that he even suggested the scoring for the "sparkling early-morning music" of the opening: woodwinds and glockenspiel. ("If he hadn't directed me," said Goodwin, "I would have written something with a macabre lilt to it"—but Hitchcock wanted no hint of the horror to come.)

CROWNING GLORIES

Hitchcock was a great practical joker, who used his pranks to satisfy his lifelong curiosity about how people react in extraordinary, or suspenseful, circumstances. When Goodwin first called on the director, he found Hitchcock sitting in his usual Buddha-like pose, hands quietly folded over his enormous abdomen. Beside him, on a table, was a hatbox.

"Hitchcock opened the box and pulled out his head," says Goodwin. "I mean, it was a perfect latex replica of his own head.

" 'What do you think of that?' he asked me.

" 'Very nice,' I said. What *do* you say when someone shows you a perfect replica of his own head?"

Before he died, Hitchcock made one final joke at death's expense. Though he and his wife, Alma, had become American citizens in the 1950s, Hitchcock was knighted in 1979, by Queen Elizabeth II of his native England. The British consul general came to Universal Studios to announce the honor. "I hope," commented Sir Alfred, "that when the queen's tapping me on the shoulder—she won't let the sword slip."

2000 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. Alfred Hitchcock's philosophy of life.
   b. Alfred Hitchcock's career.
   c. Alfred Hitchcock's childhood.
   d. Alfred Hitchcock's personal life.

2. The main idea is that Alfred Hitchcock was
   a. one of the world's greatest film directors.
   b. a fascinating character.
   c. a genius.
   d. typically English.

Details

3. One of Alfred Hitchcock's greatest talents was
   a. writing great dialogue.
   b. getting top performances from the actors he directed.
   c. his spontaneous approach to filmmaking.
   d. telling a story visually.

4. Alfred Hitchcock made
   a. 54 films, most of which were successful.
   b. only three really successful films.
   c. all his successful films in the United States.
   d. his most famous films in the 1920s.

5. Hitchcock spoke
   a. with a stutter.
   b. rapidly.
   c. slowly.
   d. with a Cockney accent.

6. Hitchcock's films achieved commercial success
   a. only after his death.
   b. early in his career.
   c. but did not bring him real wealth.
   d. but they did not achieve critical success.

Inferences

7. The author implies that part of Alfred Hitchcock's talent at writing suspense films came from
   a. his excellent film school training.
   b. his studies of human nature.
   c. psychological quirks.
   d. all of the above.

8. The author implies that part of the reason for the success of Hitchcock's films was a result of
   a. practical jokes.
   b. choice of settings.
   c. talent at characterization.
   d. attention to detail.

9. The popularity of Alfred Hitchcock's television series was based on a combination of suspense and
   a. sex.
   b. folksiness.
   c. violence.
   d. humor.

10. The author implies that most of Hitchcock's films
    a. are based on classical tales.
    b. have the same ending.
    c. have the same theme.
    d. have a typical "whodunit" plot.

CRITICAL THINKING QUESTIONS

1. Some people enjoy suspense films, whereas others don't. Why do you think that some people find them appealing?

2. Why does the author consider Alfred Hitchcock a great filmmaker?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **lugubrious** (40)
   a. sarcastic
   b. friendly
   c. mournful
   d. nervous

2. **disconcerted** (41)
   a. fazed
   b. angered
   c. depressed
   d. comforted

3. **macabre** (42)
   a. cheerful
   b. ridiculous
   c. dark
   d. ghastly

4. **corporal** (42)
   a. very severe
   b. psychological
   c. physical
   d. inconsistent

5. **intoned** (43)
   a. droned
   b. laughed
   c. sang
   d. prayed

Read this article. Write your starting time here: ________.

6

Improving Your T.Q. (Test-Taking Quotient)

Perry W. Buffington

"You will have one hour to complete this test. All answers must be marked on the answer sheet. Make no marks on the test booklet. Using a No. 2 pencil, place your name. . . .Ready? Begin."

They're off! Each test-taker working at a different pace; each using a different technique and strategy; all wishing they were somewhere else.

Ours is a test-taking culture. And whether you are an adult job-hunter, license-applicant or student, tests always provoke uncertainty, especially if life decisions are attached to them.

In 12 years of your elementary and secondary education, you completed a conservative estimate of 2,600 weekly quizzes. College midterm and final examinations over a four-year period account for another 100, and each year of advanced professional training adds another 25 major exams.

People do not realize that classroom examinations represent only a small segment of testing experience. School systems administer approximately 2 million standardized tests in addition to regular classroom tests.

The total number administered by business, government, industry and clinics, however, is astronomical, dwarfing the total number of school tests.

People tend to take tests without really understanding them. One sure way to improve your performance is to familiarize yourself with the different types of examinations. Simply understanding the test format promotes self-confidence.

Can familiarity with test-taking boost your test scores? Yes, along with 15 other "tricks." Read on.

All tests—whether simple classroom quizzes, tests for a driver's license or statistically oriented aptitude tests—have one major point

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Perry W. Buffington, "Improving Your T.Q. (Test-Taking Quotient)," *Friendly Exchange*, Winter 1982, pp. 34, 36. © 1982 Farmers Insurance Group of Companies.

in common: A test is a measure of a person's behavior at *one* point in time.

A long-held myth has led most people to conclude that test scores are forever. This is simply not true.

Scores change from one test-taking to the next. In fact, there are numerous reported cases of intelligence quotients (IQs) fluctuating as much as 30 or 40 points between test administrations.

Another source of score fluctuation is a result of the test-taker's uncertainty with different types of tests.

Overall there are two specific types: maximal- and typical-performance tests. Maximal tests attempt to measure an individual's best possible performance accurately. Included in this type are intelligence tests, academic or classroom (achievement) tests and aptitude tests. Of these, IQ tests are the most widely known and the least understood.

It's amazing how so much confusion over those two little letters, IQ, has proliferated since the testing movement began in the early 1900s. The first intelligence tests were conceived by Alfred Binet, a French psychologist, who was asked to develop a procedure to predict which children were unable to learn in a classroom setting. Today there are approximately 350 intelligence tests on the market.

Myths surrounding the IQ test have grossly contaminated the public's understanding; people want the IQ test to do more than it is capable of doing. It is best used to predict school success: to assess mental skills and the ability to adapt in new situations and learn academically.

Another maximal-performance test is an admissions test (technically a form of aptitude testing). These tests are designed to measure the degree of skill of people when they are attempting to perform to the limit of their ability. But people allow these tests to intimidate them, and that puts them under a great deal of tension. If you've taken one of these exams previously, chances are your score will increase in subsequent testing.

Two important points here: First, put the practice rule to work for you (familiarity, again). Second, ask friends who have taken the test what they remember about it, and then check your local bookstore for manuals that will prepare you for the test. Books currently on the market that raise scores do so not by divulging knowledge, but by giving you familiarity with the items and test formats.

Typical performance tests do not promote as much anxiety as maximal-performance tests, for they are designed to assess interests, personality traits, attitudes and other similar characteristics. There is little preparation needed and no "right" or "wrong" answers.

Now for the 15 other tricks:

1. When it is possible to prepare for a test, do so! In fact, "overlearn" the material.

Research consistently shows that overlearning the material reduces anxiety and raises test scores.

Also, it has been found that consistent studying over a period of time is more effective than cramming just before a test. Going to the movies the night before an exam can be therapeutic. How do you know when overlearning takes place? When you feel you have mastered the subject, study one or two hours more.

2. Show up on time, but not early. If you must get there early, stand alone, away from the crowd. If you pay attention to others' worries, your anxiety level will increase, too.

3. Know in advance if the test has a correction formula. For example, for every four items you answer incorrectly, one right one might be deducted from your total score. If you answer 50 items correctly, but miss 20, after the correction formula, your score would be 45. This is an attempt to correct for guessing.

4. Eliminate alternatives. If the item is a four-choice, multiple-choice format, the odds are one in four you could guess the right one. If you can eliminate any two of the four, your odds are 50-50. If you cannot eliminate any of the alternatives, you have no idea which one is correct, and if there is no correction for guessing, then pick the longest answer and proceed to the next test question.

Test authors tend to make the correct answer the longest.

5. Test authors also tend to make one of two parallel statements the correct answer. For instance, if two of the four choices have major differences in wording, and if the other two are almost identical in structure and wording, chances are one of the parallel statements is right.

Probably the longer statement will get you points.

6. Read directions carefully. Many points are lost because people don't understand what they are supposed to do. If you have not finished reading the directions or don't understand them, ask the proctors for assistance.

7. If the test is multiple-choice, requiring you to read a "stem" and then select one correct response from four alternatives, attempt to answer the question before you read the possible choices. After you formulate your answer, match your ideas to the possibilities and pick the one most similar. By doing this, you are using not only recognition but recall.

8. Pace yourself so you complete as many items as possible.

Sometimes the items at the end of a test are weighted more because fewer people answer them.

9. If the test requires you to read long passages and then answer questions about the reading, read the questions first. By doing this, you

will know what you are looking for as you read, and you'll be in a much better position to answer. If the test is timed, this technique also increases your speed and efficiency.

10. Skip items you are unsure of, items about material you've seen before but can't remember the answer immediately. Chances are your brain will be searching for and retrieving the information while you are working on other items. When the answer comes to you, go back and mark it.

11. Do not change your answers on multiple-choice tests unless you are very uncertain about your initial answer. Research has shown that only when you have strong doubts is your second answer more likely to be correct.

12. Read the questions carefully. On essay tests, note such key words as compare, contrast, discuss, evaluate, analyze, define and describe. If you are unsure about an essay question, your response will come across as wordiness. Do what the question asks, be direct, make your point and support it. On multiple-choice tests, look out for such negative disclaimers as, "Which of the following could *not* be . . . ?"

As you read the test questions, underline the key words. This will recheck your thinking.

13. There is some evidence that if you are slightly cool you will do better on a test. Informal observations certainly support this point. For instance, if you are too warm, you may become sleepy and lose your focus.

14. Re-check your work. Make clerical corrections only.

15. Finally, ask to see your corrected test and scores. By reviewing a test, you become test-wise.

Tests are necessary to determine levels of knowledge and to help make placement decisions. They are capable of motivating via feedback. So it is important to develop a healthy, positive attitude toward examinations.

As tests are mastered, they serve as "trial runs" for other, more difficult life tests.

1500 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. the validity of tests.
   b. how to take tests.
   c. types of tests.
   d. test-taking for college students.

2. The main idea is that
   a. you must understand the different test formats.
   b. maximal-performance tests are unfair.
   c. test-wiseness is more important than knowing the subject.
   d. you can improve your performance on tests.

Details

3. An example of a maximal-performance test is
   a. an aptitude test.
   b. an interest inventory.
   c. a personality test.
   d. all of the above.

4. Overlearning is
   a. studying just up to the point of mastery.
   b. stopping just before mastery.
   c. studying beyond the point of mastery.
   d. cramming the night before a test.

5. Familiarity with test formats will
   a. increase your scores on typical performance tests.
   b. increase your scores on maximal-performance tests.
   c. make you feel more comfortable but won't change your scores.
   d. increase your scores on all types of tests.

6. The correct multiple choice answer tends to be the
   a. least obvious one.
   b. most obvious one.
   c. shortest one.
   d. longest one.

Inferences

7. On a test that has five multiple choices (a–e) and uses a correction formula, the formula usually is the number right minus ¼ the number wrong. If you don't know the answer, you should guess
   a. when you can eliminate two of the choices.
   b. when you can eliminate three of the choices.
   c. only when you are sure of the answer.
   d. you shouldn't guess when there is a correction formula.

8. The author implies that I.Q. tests are
   a. worthless.
   b. often misinterpreted.
   c. culturally biased.
   d. typical performance tests.

9. The author implies that test-wise people
   a. use similar strategies.
   b. find a technique that works for them and stick to it.
   c. often earn the lowest score because of overconfidence.
   d. rarely study for tests.

10. The author implies that the most important factor in becoming test-wise is
    a. familiarity with test formulas.
    b. your method of studying.
    c. your intelligence.
    d. the amount of practice you have had.

CRITICAL THINKING QUESTIONS

1. Which of the test-taking suggestions mentioned did you use before you read the article?

2. On a scale of 1–100 rate your T.Q. for taking maximal-performance tests based on the fifteen tricks provided at the end of the article. Give yourself seven points for each trick you already use consistently. Give five points for ones you usually use and three points for ones you sometimes use. Now that you have rated your T.Q., describe three things you can do to raise it.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **astronomical** (47)
   a. starry
   b. relating to pilots of space ships
   c. relating to the existence of life in space
   d. very large

2. **fluctuate** (48)
   a. flow
   b. change
   c. grow
   d. reduce

3. **proliferated** (48)
   a. grown
   b. changed
   c. reduced
   d. disappeared

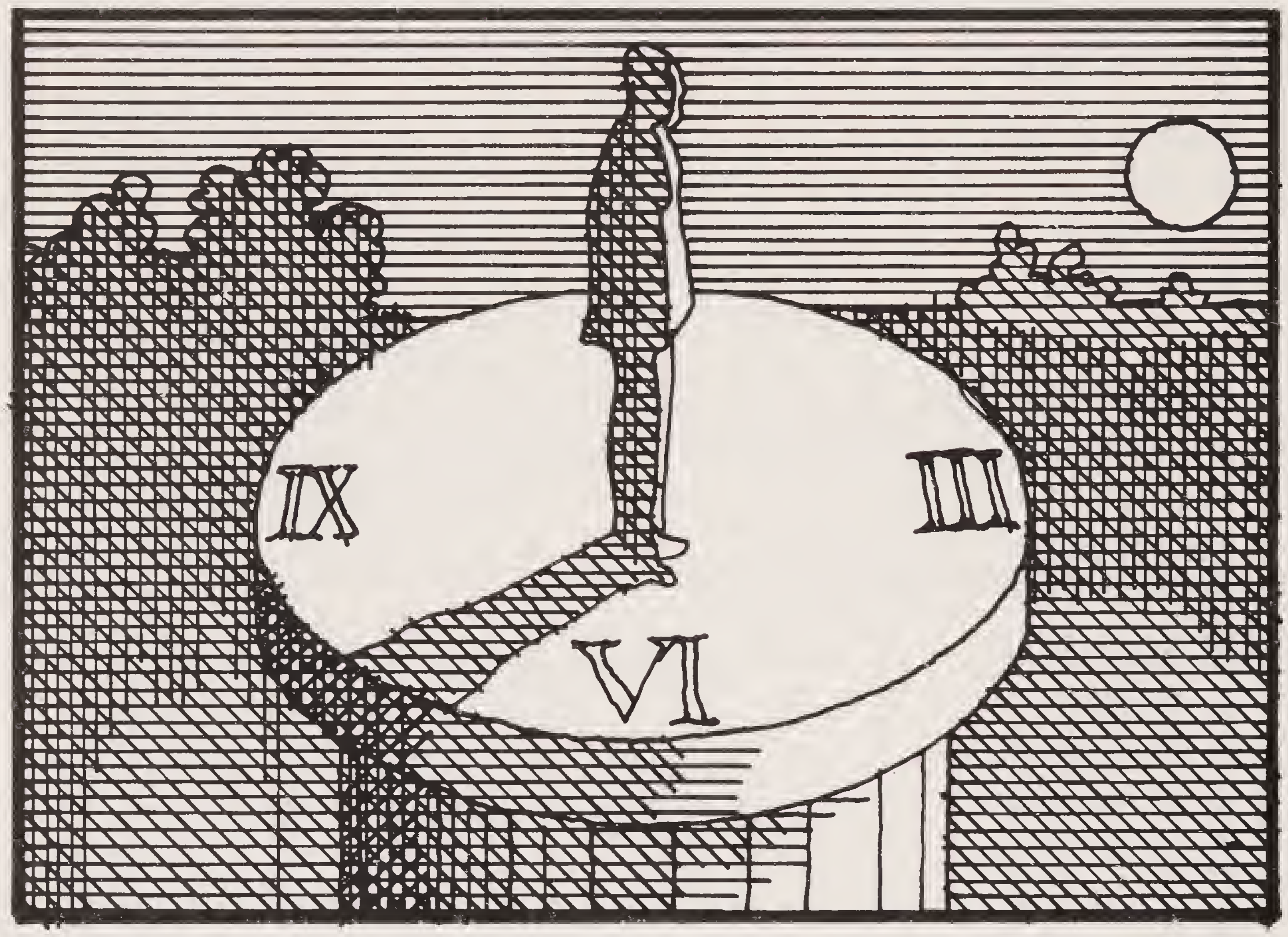
4. **divulging** (48)
   a. hiding
   b. disappearing
   c. revealing
   d. advertising

5. **proctors** (49)
   a. test makers
   b. test takers
   c. test scorers
   d. test supervisors

Read this article. Write your starting time here: ________.

7

Larks and Owls: The Inner Clock That Rules Our Lives



GUESS WHAT TIME it is—without looking at your watch! The chances are you will be right to within half an hour. Or try waking up at a particular time—without an alarm clock. You'll probably be able to do that, too.

Just about everyone can do these things, with a little practice, because the human body has its own built-in clocks.

There is a complex series of interacting rhythms in nearly everything the human body does. It sleeps to a rhythm, eats to one, and even shows a rhythm in the electrical waves produced by the brain.

Three main rhythmic cycles affect body time: the daily rhythm of the revolving earth; the monthly orbit of the moon around the earth; and the yearly journey of the earth around the sun.

A PERFECT TIME SENSE

Not only mankind is affected by these great natural tides. All animals and plants feel them, too. Sometimes a body clock can keep accurate

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From *Strange Stories, Amazing Facts,* © 1976 The Reader's Digest Association, Inc., pp. 51–52.

time to the precise minute, as in the case of the bean aphid, which can either lay eggs or produce live young, according to the season of the year and the length of the day. So perfect is this insect's adaptation to natural time that when the daylight lasts longer than 14 hours 55 minutes, live offspring are born to take full advantage of the extra warmth. If the day is shorter, the aphid lays eggs to hatch at a later time.

Man's time sense is both mental and physiological—the world over. He feels hungry every three to four hours. His brain cells show two- to three-hour cycles of activity. Even dreams run in cycles. During dreaming, the eyes, even under closed eyelids, show rapid scanning movements, much as they would in watching a movie or television. Measurements of this movement, during "rapid eye movement," or "REM," sleep, permit accurate timing of periods of dreaming. Based on this, man appears to dream in cycles of about 90 minutes.

CIRCADIAN RHYTHM

Man's natural rhythm of life is balanced between the length of the 24-hour solar day and the lunar day, which is 50 minutes longer. For this reason it is called the circadian rhythm, meaning, literally, "about a day." Under normal conditions the circadian rhythm is constantly influenced by the rising and setting of the sun. But people isolated from outside stimuli—such as prisoners kept constantly in cells without natural light—revert automatically to a longer natural cycle.

The circadian pattern seems to be controlled in part by the hypothalamus—an area in the base of the brain close to the pituitary gland. The hypothalamus can regulate pituitary secretions, and thus, in turn, the activity of a number of other endocrine glands. Effects on the cortex of the adrenal gland, and changes in release of an adrenal hormone called cortisol, appear to be especially important in certain kinds of rhythms. These mechanisms are highly adaptable.

Most humans do have contact with natural stimuli, and their slightly shorter version of the circadian rhythm is vitally important to them. Temperature, blood pressure, pulse, breathing, and hormone activity all rise and fall in time with the world's slow spin.

A CYCLE FOR ILLNESS

Similarly, ability, temper, and even resistance to infection are controlled by the circadian clock. This may be why some epileptics have seizures only at certain times of the day or why pregnant women get morning sickness.

Experiments have shown that mice injected with pneumonia germs at 4 a.m. survive better than those injected at any other time of day. This could be important to humans. If vulnerability to disease is rhythmic, then response to vaccination is likely to be rhythmic, too.

Circadian rhythms account for the difference between "owls," people who are wide awake at night and stay up late, and "larks," who rise early, do their best work in the morning, and go to bed early.

LARK AND OWL PATTERNS

Both the lark people and the owl people have quite distinct rhythms, probably because of differences in the rhythm of their metabolism. The variation is important in that it shows an important difference in rhythmic patterns in members of the same species. Surprisingly, although owls go to bed later than larks, both groups tend to get up at about the same time. In larks body temperature and efficiency rise more quickly, but by evening they have "peaked out"; whereas owls at that time are still building to their peak.

Regular air travelers experience "jet lag"—a feeling of bewilderment and lethargy when they make rapid journeys from one time zone to another. The phenomenon is caused by the individual's circadian rhythm being out of step with clock time in his new part of the world. Gradually, he will adapt to new rhythms, but the process may take as long as a week.

The best known cycle is that of menstruation in women. This monthly tide of physiological change can alter a woman's moods dramatically and affect her susceptibility to illness. Men also follow a monthly cycle of hormonal activity, but its effects are less obvious.

OYSTERS SENSE THE MOON

A remarkable experiment with oysters shows that their rhythm is extremely persistent. Oysters were taken from Long Island Sound 1,000 miles inland in a sealed and darkened tank. At first, they continued to follow their normal rhythm, opening and closing according to the cycle of the tides on their home beach. But after 15 days their rhythm changed—to what it would have been if the sea's tides had washed over their new home.

They opened when the moon—which controls the tides—reached its highest point over their new location. This occurred despite the fact that the oysters were kept in a light-free tank, at a constant temperature, thus ruling out responses to lunar light or temperature change. One possibility is that they were responding to subtle changes in atmospheric pressure caused by the moon's gravitational pull.

In human beings, birth and death follow cycles. Most babies are born—and most heart attacks occur—between midnight and 6 a.m. More babies are conceived in August and September than in February and March. And science has even confirmed some of the age-old beliefs of astrology.

THE COSMIC RHYTHM

The sun's own cycle—the 11-year rise and fall of sunspots, which are dark smudges that can be seen on the sun at the same time as it hurls vast fountains of energy into space—also has its effects upon life. In the 1930s the Russian historian A. L. Tchijevsky claimed to have found a link between this cosmic rhythm and wars and epidemics on earth.

Maki Takata, a Japanese professor, discovered a relationship between human blood and the sun. He had developed a method by which gynecologists could check the menstrual cycles of women. This involved comparative tests of the albumin in the blood of both sexes. In January 1938 hospitals throughout the world that used the "Takata reaction" reported that the results were changing for men as well as women. Takata cross-checked and analyzed the results for 20 years and discovered that they changed primarily when a group of sunspots passed across the center of the sun: that is, when the sun was pumping a concentrated stream of radiation toward the earth. The burst of hospital reports corresponded to a sudden surge in the sunspot cycle after several years of quiet.

Takata also noticed that his test results showed a sudden change a few minutes before sunrise each day—as if the blood itself "foresaw" the break of day. "Man," Takata declared, "is a living sundial."

He could just as well have been talking about animals or plants. Whatever and wherever it is, life seems completely in step with a cosmic clock.

1400 words

Write your ending time here: ______________________________

Subtract your starting time: ______________________________

Total time: ______________________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. biological rhythms.
   b. planetary rhythms.
   c. early risers and late risers.
   d. the effects of rhythm on health.

2. The main idea is that
   a. three main rhythmic cycles are in control.
   b. the hypothalamus controls the circadian pattern.
   c. there are differences between people in their circadian rhythms.
   d. plants and animals are controlled by biological rhythms.

Details

3. The author indicates some belief in
   a. ESP.
   b. dreams coming true.
   c. premenstrual syndrome.
   d. astrology.

4. A circadian cycle is
   a. daily.
   b. weekly.
   c. monthly.
   d. yearly.

5. The difference between rhythms of larks and owls is probably controlled by
   a. heredity.
   b. metabolism.
   c. environment.
   d. habit.

6. Animals are affected by
   a. the revolutions of the earth around the sun.
   b. the revolutions of the moon around the earth.
   c. the turning of the earth on its axis.
   d. all of the above.

Inferences

7. The author implies that if we were in a different solar system with different solar, lunar, and planetary rhythms,
    a. it would be difficult or impossible to adapt.
    b. we would adapt quickly.
    c. we would have no chance of survival.
    d. women would adjust more quickly than men would.

8. The author implies that
    a. larks probably accomplish more than owls.
    b. owls probably accomplish more than larks.
    c. there is no difference in the probable accomplishment of larks and owls.
    d. differences in circadian rhythms are inherited.

9. The author implies that women
    a. are more sociable than men are.
    b. have more mood swings than men do.
    c. are biologically stronger than men are.
    d. have greater resistance to pain than men do.

10. The author implies that knowing more about circadian rhythms would have the greatest impact on the field of
    a. geology.
    b. astronomy.
    c. psychology.
    d. philosophy.

CRITICAL THINKING QUESTIONS

1. Do you think you are more like a lark or an owl? How do you adapt your class schedule and study time in college to fit your circadian rhythm?

2. Summarize the research on the circadian rhythm of oysters.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **circadian** (55)
   - a. yearly
   - b. weekly
   - c. monthly
   - d. daily
2. **vulnerability** (55)
   - a. openness to attack
   - b. freedom from worry
   - c. ability to infect others
   - d. ability to change
3. **metabolism** (56)
   - a. utilization of oxygen
   - b. production of offspring
   - c. conversion of food into energy
   - d. elimination of waste products
4. **lethargy** (56)
   - a. sluggishness
   - b. energy
   - c. madness
   - d. well-being
5. **susceptibility** (56)
   - a. state of being inoculated
   - b. sanitary habits
   - c. ability to be affected
   - d. ability to be cured

Read this article. Write your starting time here: ________.

8

The Story of a Newspaper

Dixie Berg

IT'S PROBABLY TOO much to ponder as you grope your way through the morning's mental fog to the newspaper on your front step. But the daily paper is something of a modern-day production miracle.

When you realize your morning paper contains news events that occurred after you retired the previous evening; that someone wrote and edited the stories, decided where they should go and did the layout; and that it was printed, folded, bundled and delivered in the space of a few hours, using it to wrap fish or catch paint later in the day somehow seems unjust.

Perhaps your idea of what actually happens down at the local newspaper was inspired by old movies. You imagine a crusty editor, wearing green eyeshades and barking instructions to reporters. Copy boys hustle about, and typewriters clatter. The whole confusing scene is in black and white, and you're left with the impression that newspaper offices are generally grimy, cluttered, poorly-lit places.

However, if your impression of a newspaper parallels that of "Lou Grant," then you're closer to the truth. The old movie versions definitely are no longer accurate.

A trip through *The Sunpapers* in Baltimore, which boasts one of the most advanced newspaper plants in the country, explains how a newspaper comes together and how advanced technology is changing almost every aspect of the operation. At *The Sunpapers* and other newsrooms across the country, introduction of computers from the editorial and advertising departments to the loading docks has created more efficient, cleaner, quieter—but probably less colorful—operations.

Each day except Sunday, two entirely different newspapers are published: the morning *Baltimore Sun* and the *Evening Sun*. The morning paper's circulation of some 179,000 is slightly more than that of the *Evening Sun*. A third paper, the *Sunday Sun*, with a circulation of 370,000, is distributed throughout Maryland, into Washington, D.C., eastern West Virginia and southern Pennsylvania.

Dixie Berg, "The Story of a Newspaper," *Rainbow*, Fall 1981, pp. 39–42.

Although both are owned by the same company, the two daily papers are written and edited by separate staffs. About 100 reporters and several dozen editors work for each paper. Sixteen staff photographers handle assignments for the three papers. The Sunday paper is produced by the staff of the morning *Sun*, plus a staff of about 50 reporters and three photographers who concentrate on feature stories.

Revenues from advertising—and less so from subscriptions—pay the bills at the *Sun*. Advertising accounts for roughly 80 percent of total revenues, with classifieds representing the major portion.

Early hours at the morning *Sun* are relatively quiet. Reporters appear at odd times. Some on permanent assignment, city hall or county courthouse, for instance, may not come to the office until much later, if at all. They begin the day by checking with their sources and later confer by phone with editors as stories develop. Editors generally begin arriving in mid-morning. Those who eventually see that the final edition is completed don't arrive until later in the afternoon.

Reporters develop stories in either of two ways: assignment from an editor or by initiating the story on their own and mutually agreeing with their editors on the approach to take.

Throughout the day, the *Sun*'s principal news departments—metropolitan, national, foreign, sports, financial—keep directories of stories which can be expected from reporters or which are coming from the Associated Press, Reuters, the New York Times News Service or the Field News Service.

At 4 p.m., editors of the major departments, along with the managing editor, two assistant managing editors, the night editor and the graphics director, convene for a news conference. There, editors discuss stories from their departments which may merit page-one play. The foreign editor, for example, may report that a story worthy of front-page attention is being filed by one of the *Sun*'s eight foreign correspondents in London, Paris, Bonn, Moscow, Jerusalem, Johannesburg, Peking and New Delhi. They emerge from the meeting with a news budget, a list of possible page-one stories.

Meanwhile, reporters are composing stories—not on typewriters but on video display terminals (VDTs), computerized devices that combine a TV-type screen with a keyboard similar to a typewriter. On VDTs, reporters easily can revise and rewrite stories without wasting time re-typing. For stories to appear in the first edition, reporters must meet a 7:45 p.m. deadline. The *Sun*'s first editions are on the streets around 11:30 p.m., and the fourth and final edition appears around 6:30 a.m.

Editors, also using VDTs, call up reporters' stories on their terminals to edit them, primarily for gaps in information. Stories are also read by copy editors who scrutinize them for spelling, grammatical or factual errors. Copy editors also write headlines. Then, with the push of a button, instructions on how to set the copy are transmitted to a computer in the composing room, and the computer sets type in long columns called galleys.

Back in the newsroom, the night editor submits a mock-up of the design for page one to the managing editor by 6 p.m. However, once the managing editor and his assistants leave for the day, the night editor takes charge, overseeing the front section through all four editions and monitoring the paper's other daily sections, which are handled by their respective departments. Many of the decisions about which stories will appear on the inside pages are made by the assistant night editor as he places stories and photos around the ads. Special sections, such as "A la carte" and "Perspective," are the responsibility of the weekend and special projects editor. The editorial and opinion-editorial pages are written and edited by a separate staff of writers and editors, including a political cartoonist.

With galleys set and page layouts complete, printers in the composing room follow the page mock-ups provided by editors. The printers paste in copy and position photographs on boards that are sent to the engraving department, where a large camera makes a negative of each page.

It is in production that *The Sunpapers* employ the computer to greater advantage than most other daily newspapers. Computer controls have so automated printing and mailing that newspapers are scarcely touched by human hands, except when your paper carrier drops it at your door.

In the plate room, the next step in the paper's production, page negatives are read by a computer that tells the press how much ink will be needed to print each page. Then, each negative is transformed into a thin aluminum plate which fits on the press. Chemical treatment of the plate makes the parts of the page that are to be printed receptive to ink.

Meanwhile in the reel room beneath the four presses, huge rolls of newsprint automatically are loaded onto the spider, a three-armed spindle, that feeds the presses. The paper feeds through the presses, with both sides of each page being printed at the same time. Once printed, the paper heads to a folder, which folds, cuts and directs the newspapers to the mailroom. The computer keeps operations in the mailroom moving at the same speed as the presses.

Only if additional advertising supplements need to be inserted is it necessary for human hands to touch the paper. As many as 10 supplements, such as the comics, can be added automatically. Supplements are stuffed in the mailroom. A computer controls how many papers are stacked in a bundle. Bundles are then automatically tied and carried by conveyor to the loading dock, three floors down. Again, a computer takes over, directing bundles to one of 15 loading docks, where, incredibly, the bundles are automatically loaded on a truck.

Most readers of the *Baltimore Sun* and other papers that have adopted computer technology in producing their products probably have not been affected by the changes. They continue to find a newspaper on their doorsteps each morning. But in the future, computers may provide you with a whole new way of getting the paper. Some believe that in not too many years, you will "tune in" the morning paper on your home computer—and read it off the screen. At that point, newspapers truly won't be touched by human hands—the paper carrier's or yours.

1400 words

Write your ending time here: ______________________________

Subtract your starting time: ______________________________

Total time: ______________________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. newspaper writing.
   b. publishing a newspaper.
   c. reading a newspaper.
   d. the history of newspapers.

2. The main idea of the article is that
   a. newspapers have changed over the years.
   b. newspapers are written in a unique style.
   c. newspaper production is interesting.
   d. newspapers are different in different parts of the country.

Details

3. To meet the deadline for the *Sun's* first edition, an article must be in
   a. by lunchtime.
   b. the same morning.
   c. two days ahead of time.
   d. the previous evening.

4. The morning and evening newspapers discussed in the article
   a. are written by the same staff.
   b. have larger circulations than the Sunday edition.
   c. are owned by the same company.
   d. all of the above.

5. The Sunday paper
   a. has a larger staff than the daily papers.
   b. is produced by the evening staff of the daily paper.
   c. contains fewer feature stories and more news than the dailies.
   d. has less advertising than the dailies.

6. The largest portion of the bill for a newspaper is paid by
   a. classified ads.
   b. subscriptions.
   c. local merchandisers.
   d. government subsidy programs.

Inferences

7. From the article we can infer that
   a. most reporters work in the office from nine to five.
   b. reporters must be able to type.
   c. editors aren't paid as much as reporters.
   d. editors work longer hours than reporters.

8. The increased cost of the Sunday edition is borne by
   a. increased circulation.
   b. increased advertising.
   c. revenues brought in by the more profitable daily papers.
   d. both a and b.

9. From the article we can infer that
   a. the day and night editors don't communicate very much.
   b. more papers will use computers in the future.
   c. currently all reporters sell their stories to the news services, who then sell the stories to local newspapers.
   d. newspaper reporting hasn't been affected by modern technology.

10. From the article we can infer that
   a. editors frequently change the content of news stories because of their own biases.
   b. editors try not to change the content of news stories.
   c. reporters hate the power editors have.
   d. editors tell reporters how to handle a story.

CRITICAL THINKING QUESTIONS

1. News is supposed to be reported objectively in a newspaper, yet some papers are considered more liberal or conservative than others, and some are even considered sensationalistic. Based on their jobs as described in the article, how might each of the following people contribute to slanted news: editor, copy editor, photographer, reporter, night editor?

2. What additional changes in newspaper publication do you foresee by the year 2000 as a result of computer technology.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **ponder** (61)
   a. admit
   b. consider
   c. make a decision
   d. change

2. **initiating** (62)
   a. polishing
   b. writing
   c. introducing
   d. finishing

3. **convene** (62)
   a. fly apart
   b. remain stationary
   c. go home
   d. come together

4. **scrutinize** (62)
   a. listen to
   b. think about
   c. examine
   d. type

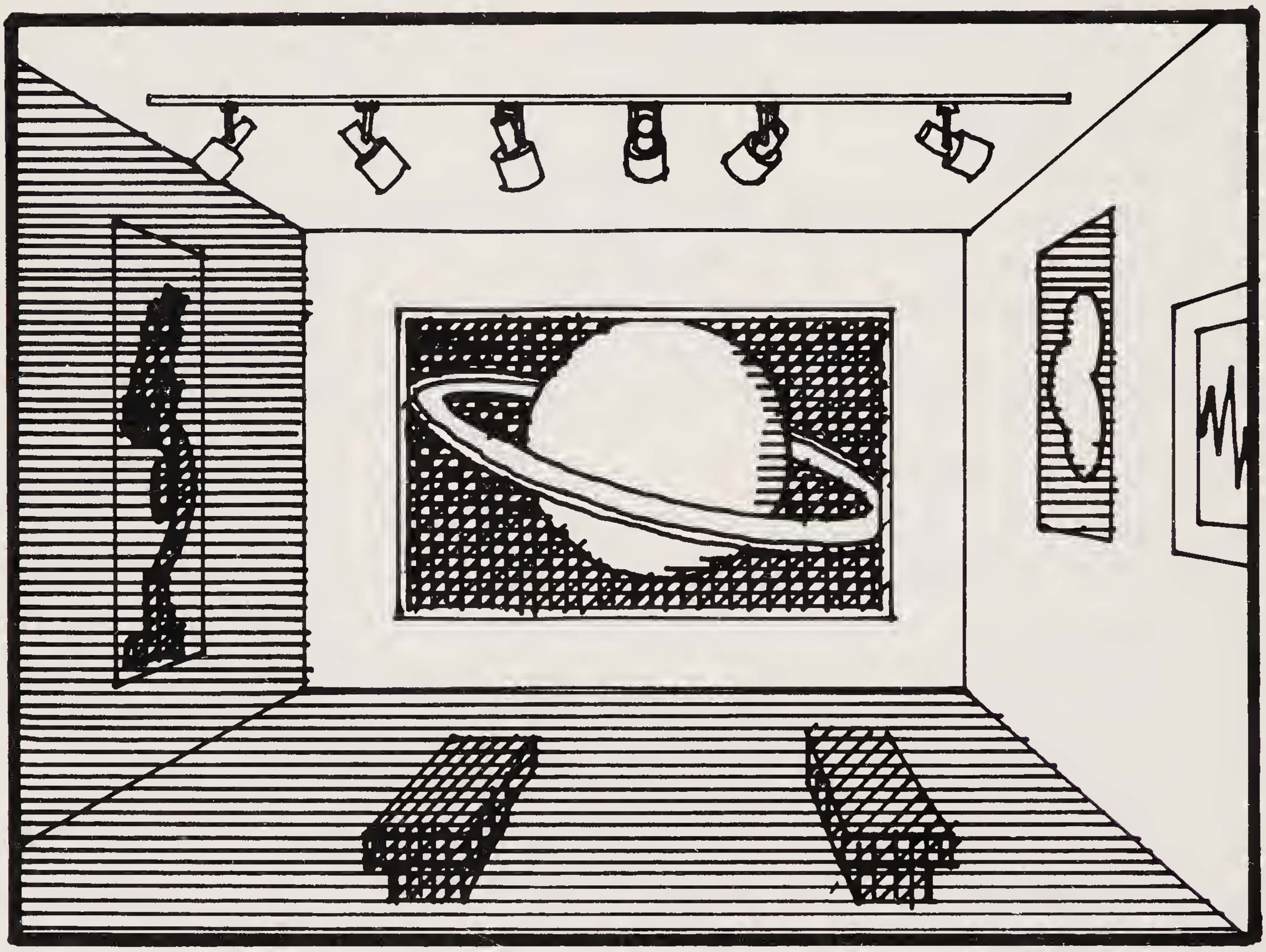
5. **monitoring** (63)
   a. checking
   b. assembling
   c. changing
   d. completing

Read this article. Write your starting time here: ________.

9

The Scientific Aesthetic

K. C. Cole



POETS SAY SCIENCE takes away from the beauty of the stars—mere globs of gas atoms. Nothing is 'mere.' I too can see the stars on a desert night, and feel them. But do I see less or more? The vastness of the heavens stretches my imagination—stuck on this carrousel, my little eye can catch one-million-year-old light . . . For far more marvelous is the truth than any artists of the past imagined! Why do the poets of the present not speak of it? What men are poets who can speak of Jupiter if he were like a man, but if he is an immense spinning sphere of methane and ammonia must be silent?"

This poetic paragraph appears as a footnote in, of all places, a physics textbook: *The Feynman Lectures on Physics* by Nobel laureate Richard Feynman. Like so many others of his kind, Feynman scorns the suggestion that science strips nature of her beauty, leaving only a

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K. C. Cole, *Discover,* December 1983, pp. 54, 63

naked set of equations. Knowledge of nature, he thinks, deepens the awe, enhances the appreciation. But Feynman has also been known to remark that the only quality art and theoretical physics have in common is the joyful anticipation that artists and physicists alike feel when they contemplate a blank piece of paper.

What is the kinship between these seemingly dissimilar species, science and art? Obviously there is some—if only because so often the same people are attracted to both. The image of Einstein playing his violin is only too familiar, or Leonardo with his inventions. It is a standing joke in some circles that all it takes to make a string quartet is four mathematicians sitting in the same room. Even Feynman plays the bongo drums. (He finds it curious that while he is almost always identified as the physicist who plays the bongo drums, the few times that he has been asked to play the drums, "the introducer never seems to find it necessary to mention that I also do theoretical physics.")

One commonality is that art and science often cover the same territory. A tree is fertile ground for both the poet and the botanist. The relationship between mother and child, the symmetry of snowflakes, the effects of light and color, and the structure of the human form are studied equally by painters and psychologists, sculptors and physicians. The origins of the universe, the nature of life, and the meaning of death are the subjects of physicists, philosophers, and composers.

Yet when it comes to approach, the affinity breaks down completely. Artists approach nature with feeling; scientists rely on logic. Art elicits emotion; science makes sense. Artists are supposed to care; scientists are supposed to think.

At least one physicist I know rejects this distinction out of hand: "What a strange misconception has been taught to people," he says. "They have been taught that one cannot be disciplined enough to discover the truth unless one is indifferent to it. Actually, there is no point in looking for the truth unless what it is makes a difference."

The history of science bears him out. Darwin, while sorting out the clues he had gathered in the Galapagos Islands that eventually led to his theory of evolution, was hardly detached. "I am like a gambler and love a wild experiment," he wrote. "I am horribly afraid." "I trust to a sort of instinct and God knows can seldom give any reason for my remarks." "All nature is perverse and will not do as I wish it. I wish I had my old barnacles to work at, and nothing new."

The scientists who took various sides in the early days of the quantum debate were scarcely less passionate. Einstein said that if classical notions of cause and effect had to be renounced, he would rather be a cobbler or even work in a gambling casino than be a physicist. Niels Bohr called Einstein's attitude appalling, and accused him of high treason. Another major physicist, Erwin Schroedinger, said, "If one has to stick to this damned quantum jumping, then I regret having ever been involved in this thing." On a more positive note, Einstein spoke about the universe as a "great, eternal riddle" that "beckoned like a liberation." As the late Harvard professor George Sarton wrote in the preface to his *History of Science*, "There are blood and tears in geometry as well as in art."

Instinctively, however, most people do not like the idea that scientists can be passionate about their work, any more than they like the idea that poets can be calculating. But it would be a sloppy artist indeed who worked without tight creative control, and no scientist ever got very far by sticking exclusively to the scientific method. Deduction only takes you to the next step in a straight line of thought, which in science is often a dead end. "Each time we get into this log jam," says Feynman, "it is because the methods we are using are just like the ones we have used before . . . A new idea is extremely difficult to think of. It takes fantastic imagination."

The direction of the next great leap is as often as not guided by the scientist's vision of beauty. Einstein's highest praise for a theory was not that it was good but that it was beautiful. His strongest criticism was "Oh, how ugly!" He often spoke about the aesthetic appeal of ideas. "Pure logic could never lead us to anything but tautologies," wrote the French physicist Henri Poincaré. "It could create nothing new; not from it alone can any science issue."

Poincaré also described the role that aesthetics plays in science as "a delicate sieve," an arbiter between the telling and the misleading, the signals and the distractions. Science is not a book of lists. The facts need to be woven into theories like tapestries out of so many tenuous threads. Who knows when (and how) the right connections have been made? Sometimes, the most useful standard is aesthetic: Erwin Schroedinger refrained from publishing the first version of his now famous wave equations because they did not fit the then-known facts. "I think there is a moral to this story," Paul Dirac commented later. "Namely, that it is more important to have beauty in one's equations than to have them fit experiment . . . It seems that if one is working from the point of view of getting beauty in one's equations, and if one has really a sound insight, one is on a sure line of progress."

Sometimes the connection between art and science can be even more direct. Danish physicist Niels Bohr was known for his fascination with cubism—especially "that an object could be several things, could change, could be seen as a face, a limb, and a fruit bowl." He went on to develop his philosophy of complementarity, which showed how an electron could change, could be seen either as a particle or a wave. Like cubism, complementarity allowed contradictory views to coexist in the same natural frame.

Some people wonder how art and science ever got so far separated in the first place. The definitions of both disciplines have narrowed considerably since the days when science was natural philosophy, and art included the work of artisans of the kind who build today's fantastic particle accelerators. "Science acquired its present limited meaning barely before the nineteenth century," writes Sir Geoffrey Vickers in Judith Wechsler's collection of essays *On Aesthetics in Science.* "It came to apply to a method of testing hypotheses about the natural world by observations or experiments . . ." Surely, this has little to do with art. But Vickers suspects the difference is deeper. People want to believe that science is a rational process, that it is describable. Intuition is not describable, and should therefore be relegated to a place outside the realm of science. "Because our culture has somehow generated the unsupported and improbable belief that everything real must be fully describable, it is unwilling to acknowledge the existence of intuition."

There are, of course, substantial differences between art and science. Science is written in the universal language of mathematics; it is, far more than art, a shared perception of the world. Scientific insights can be tested by the good old scientific method. And scientists have to try to be dispassionate about the conduct of their work—at least enough so that their passions do not disrupt the outcome of experiments. Of course, sometimes they do: "Great thinkers are never passive before the facts," says Stephen Jay Gould. "They have hopes and hunches, and they try hard to construct the world in their light. Hence, great thinkers also make great errors."

But in the end, the connections between art and science may be closer than we think, and they may be rooted most of all in a person's motivations to do art, or science, in the first place. MIT metallurgist Cyril Stanley Smith became interested in the history of his field and was surprised to find that the earliest knowledge about metals and their properties was provided by objects in art museums. "Slowly, I came to see that this was not a coincidence but a consequence of the very nature of discovery, for discovery derives from aesthetically motivated curiosity and is rarely a result of practical purposefulness."

1600 words

Write your ending time here: ______________________

Subtract your starting time: ______________________

Total time: ______________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. the superiority of science over art.
   b. scientists who are artists.
   c. the relationship between art and science.
   d. the value of science.

2. The main idea of the article is that
   a. science, as well as art, has an aesthetic aspect.
   b. most scientists are painters or musicians.
   c. scientists are more important than artists in our society.
   d. science and art are really the same thing.

Details

3. Einstein's highest praise for a theory was that it
   a. was good.
   b. was beautiful.
   c. was carefully thought out.
   d. furthered scientific thought.

4. The connection between art and science is rooted in
   a. the type of work being produced.
   b. the motivation of the person doing the work.
   c. similarity of theories.
   d. textbooks that identify the historical background of both.

5. How does the author feel that science and art differ?
   a. Science is logical.
   b. Science uses the universal language of mathematics.
   c. Scientific insights are testable.
   d. All of the above.

6. Schroedinger did not publish his wave equations, because he
   a. couldn't find a publisher.
   b. was afraid his ideas would be stolen.
   c. contradicted current known facts.
   d. wanted more time to experiment with the equations.

Inferences

7. Science can never be totally factual, because
    a. human error is part of any experiment.
    b. scientists can never be totally dispassionate about their work.
    c. intuition is an integral part of scientific thought.
    d. all of the above.

8. The author would probably define science as a
    a. book of lists.
    b. set of tautologies.
    c. tapestry of theories and facts.
    d. rational process.

9. The author seems to advocate
    a. separating science and art.
    b. returning to a pre-nineteenth-century concept of science and art.
    c. making all scientists artists.
    d. requiring all scientists to take art classes as a part of their degree.

10. From the article we can infer that
    a. science has aesthetic overtones.
    b. a view of science as a totally rational process is inconsistent with the way many scientists feel.
    c. if scientists disavow the intuitive aspects of science, they are limiting their abilities to discover new theories.
    d. all of the above.

CRITICAL THINKING QUESTIONS

1. Most colleges require courses in a broad spectrum of areas outside the major for graduation. In view of the article, what are the advantages and disadvantages of this?

2. Name at least three occupations in which it is necessary to combine skills in both science and art.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **aesthetic** (68)
   a. development of a new idea
   b. sensitivity to art and beauty
   c. method of problem solving
   d. origins of art

2. **elicits** (69)
   a. springs forth
   b. follows
   c. draws forth
   d. denies

3. **perverse** (69)
   a. giving
   b. ongoing
   c. contrary
   d. controllable

4. **tautologies** (70)
   a. conflicts
   b. circular arguments
   c. new ideas
   d. experiments

5. **tenuous** (70)
   a. strong
   b. flimsy
   c. colorful
   d. unusual

Read this article. Write your starting time here: ________.

10

Speaking of Speaking

Lewis Thomas

THERE IS NOTHING at all wrong with the English language, so far as I can see, but that may be only because I cannot see ahead. If I were placed in charge of it, as chairman, say, of a national Academy for the Improvement of Language, I would not lay a finger on English. It suits every need that I can think of: flexibility, clarity, subtlety of metaphor, ambiguity whenever ambiguity is needed (which is more often than is generally acknowledged), and most of all changeability. I like the notion of a changing language. I have no doubt that today's English is a considerable improvement over Elizabethan or Chaucerian talk, and miles ahead of Old English. By now the language has reached its stage of ultimate perfection, and I'll be satisfied to have it this way forever.

But I know I'm wrong about this. English is shifting and changing before our eyes and ears, beyond the control of all individuals, committees, academies, and governments. The speakers of earlier versions undoubtedly felt the same satisfaction with their speech in their time. Chaucer's generation, and all the generations before, could not have been aware of any need to change or improve. Montaigne was content with 16th-century French, and obviously delighted by what he could do with it. Long, long ago, the furthermost ancestors of English speech must have got along nicely in Proto-Indo-European without a notion that their language would one day vanish.

Vanish is the wrong word anyway for what happened. The roots of several thousand Indo-European words are still alive and active, tucked up neatly like symbionts inside other words in Greek, Latin, and all the Germanic tongues, including English. Much of what we say to each other today in English could be interpreted as Greek with an Indo-European accent. Three or four centuries from now, it is probable that today's English will be partly incomprehensible to everyone except the linguistic scholars and historians.

The ancient meanings of the Indo-European roots are sometimes twisted, even distorted beyond recognition, but they are still there, resonating inside, reminding. *Bha* was the Indo-European word for

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Discover, March 1983, pp. 80–81.

speaking, becoming *phanai* in Greek, then used much later for our most fundamental word indicating the inability to speak: infancy. *Ster* was a root meaning to stiffen; it became *sterban* in Germanic and *steorfan* in Old English, meaning to die, and then turned into starve in our speech.

The changes in language will continue forever, but no one knows for sure who does the changing. One possibility is that children are responsible. Derek Bickerton, professor of linguistics at the University of Hawaii, explores this in his recent book *Roots of Language.* Sometime around 1880 a language catastrophe occurred in Hawaii when thousands of immigrant workers were brought to the islands to work for the new sugar industry. These people, speaking Chinese, Japanese, Korean, Portuguese, and various Spanish dialects, were unable to communicate with each other or with the native Hawaiians or the dominant English-speaking owners of the plantations. So they first spoke Pidgin (a corruption of "business") English—the sort of thing such mixed language populations have always done. A pidgin is not really a language at all. It is more like a set of verbal signals used to name objects but without the grammatical rules needed for expressing thought and ideas. And then, within a single generation, the whole mass of mixed peoples began speaking a totally new tongue: Hawaiian Creole. The new speech contained ready-made words borrowed from all the original tongues, but bore little or no resemblance to the predecessors in the rules used for stringing the words together. Although generally regarded as a primitive language, Hawaiian Creole had a highly sophisticated grammar.

Professor Bickerton's great discovery is that this brand-new speech could only have been made up by the children. There wasn't time enough to allow for any other explanation. Soon after the influx of workers in 1880 the speech was Hawaiian Pidgin, and within the next 25 to 30 years the accepted language was Creole. The first immigrants, the parents who spoke Pidgin, could not have made the new language and then taught it to the children. They could not themselves understand Creole when it appeared. Nor could the adult English speakers in charge of the place either speak or comprehend Creole. According to Bickerton's research, it simply had to have been the work of children, crowded together, jabbering away at each other, playing.

Bickerton's term for the gift of speech is "bioprogram." The idea confirms and extends the proposal put forward by Noam Chomsky, almost three decades ago, that human beings are unique in their possession of brains equipped for generating grammar.

All this should change one's attitude toward children, I think, to something like awe. We have always known that in childhood new languages as well as one's own can be picked up quickly and easily. The facility disappears in most people around the time of adolescence, and from then on the acquisition of a new language is hard, slogging labor. But it requires a different order of respect for children to take in the possibility that they make up languages, change languages, and perhaps have been carrying the responsibility for evolving language from the first human communication to 20th-century speech. If it were not for their special gift we might all be speaking Indo-European or Hittite, but here we all are, speaking several thousand different languages and dialects, most of which would be incomprehensible to the human beings on earth just a few centuries back.

Perhaps we should be paying serious attention to the possible role played by children in the origin of speech itself. It is of course not known when language first appeared in our species, and it is pure guesswork as to how it happened. One popular guess is that at a certain stage in the evolution of the human skull and brain, speech became a possibility in a few mutants. These intellectual people and their genes outcompeted all their speechless cousins, and natural selection resulted in *Homo sapiens*. This notion would require the recurrence of the same mutation in many isolated communities all around the globe, or else one would have to assume that a lucky few speakers managed to travel everywhere on earth, leaving their novel genes behind.

Another possibility is that human language did not pop up as a special mutation, but came into existence as a latent property of all human brains at some point in the evolution of the whole species. The environment required for expression of the brain centers involved in the process was simply children, enough children crowded together in circumstances where they could spend a lot of time playing together. A critical mass of children in a sufficiently stable society could have been achieved whenever large enough numbers of families settled down to live in close quarters, as may have happened long ago in the tribal life of hunters and gatherers or in the earliest agricultural communities.

It makes an interesting scenario. The adults and wise elders of the tribe sitting around a fire, speaking small-talk pidgin, pointing at one thing or another and muttering isolated words. No syntax, no strings of words, no real ideas, no metaphors. Somewhere near by, that critical mass of noisy young children, gabbling and shouting at each other, their voices rising in the exultation of discovery, talking, talking, and forever thereafter never stopping.

1200 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. new languages.
   b. language roots.
   c. linguistic science.
   d. the history of the English language.

2. The main idea is that
   a. there is a new theory of language change.
   b. all languages evolve.
   c. children are responsible for language.
   d. mutants are responsible for speech.

Details

3. Professor Bickerton believes that Hawaiian Creole was created by children, because
   a. the adults could not understand Pidgin.
   b. all the mutants were children.
   c. the language developed very quickly.
   d. the critical mass was just right.

4. The ability to pick up languages easily is greatest in
   a. elementary school.
   b. high school.
   c. college.
   d. graduate school.

5. The author believes that children may have been responsible for the origin of speech when
   a. language became possible in a few mutants.
   b. the gene spread through natural selection.
   c. language became a latent property of all human brains.
   d. all of the above.

6. The furthermost ancestor of English was
   a. Germanic.
   b. Greek.
   c. Latin.
   d. Indo-European.

Inference

7. The author implies that the major difference between Pidgin and Creole is
   a. vocabulary.
   b. grammar.
   c. dialect.
   d. metaphor.

8. Bickerton's and Chomsky's theories imply that
   a. language ability is genetically determined.
   b. languages can be learned by apes as well as by people.
   c. syntax is learned through repetition and practice.
   d. young children do not understand grammar.

9. The reason that children can learn languages more easily than adults seems to be that
   a. their thinking is less rigid than that of adults.
   b. they are less inhibited than adults.
   c. they are more sociable than adults, so they have more language experiences.
   d. they have a biological ability that decreases with age.

10. The author implies that a necessary condition for speech to develop was
    a. the growth of cities.
    b. male dominance.
    c. domestication of animals.
    d. group living.

CRITICAL THINKING QUESTIONS

1. Briefly summarize Derek Bickerton's theory of language change.

2. What, if any, evidence is there in the article that languages improve as they evolve?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **metaphor** (75)
   a. a figure of speech containing an implied comparison
   b. the ability to express clearly
   c. a word or expression from a foreign language
   d. the verb "to be"

2. **symbionts** (75)
   a. things that stand for or represent other things
   b. organisms living together in a state of mutual advantage
   c. feelings in agreement with another's tastes, moods, and so forth
   d. things that can be divided into two identical halves

3. **mutant** (77)
   a. an animal or plant with inheritable characteristics different from those of the parents
   b. one who is unable to speak, usually associated with deafness
   c. an animal or plant that has an identical twin
   d. one who is tone deaf

4. **latent** (77)
   a. tardy
   b. highly skilled
   c. undeveloped
   d. sideways

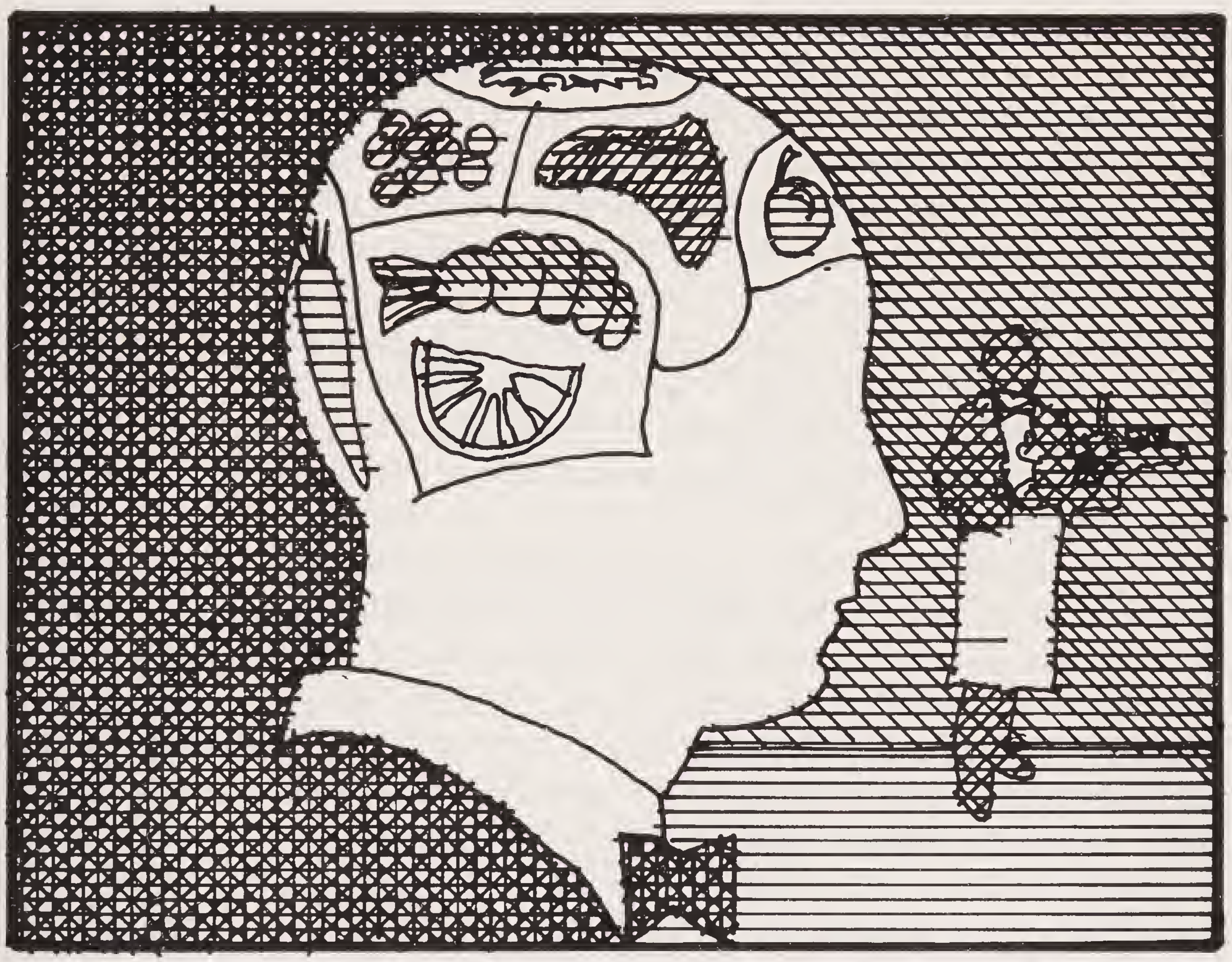
5. **syntax** (77)
   a. spelling
   b. figures of speech
   c. vocabulary
   d. grammar

Read this article. Write your starting time here: ________.

11

A Memory for All Seasonings

Stephen Singular



ONE EVENING TWO years ago, Peter Polson, a member of the Psychology Department at the University of Colorado, took his son and daughter to dinner at Bananas, a fashionable restaurant in Boulder. When the waiter took their orders, Polson noticed that the young man didn't write anything down. He just listened, made small talk, told them that his name was John Conrad, and left. Polson didn't think this was exceptional: There were, after all, only three of them at the table. Yet he found himself watching Conrad closely when he returned to take the orders at a nearby table of eight. Again the waiter listened, chatted, and wrote nothing down. When he brought Polson and his children their dinners, the professor couldn't resist introducing himself and telling Conrad that he'd been observing him.

Adapted from Stephen Singular, "A Memory for All Seasonings," *Psychology Today*, October 1982, pp. 55–63. Reprinted from *Psychology Today* magazine, copyright © 1982, American Psychological Association.

The young man was pleased. He wanted customers to notice that, unlike other waiters, he didn't use a pen and paper. Sometimes, when they did notice, they left him quite a large tip. Polson also told Conrad that he had made a mistake. He had forgotten to bring his daughter her baked potato. Conrad was embarrassed. He had once handled a table of 19 complete dinner orders without a single error. At Bananas, a party of 19 (a bill of roughly $200) would normally leave the waiter a $35 tip. They had left Conrad $85.

Polson was impressed enough to ask the waiter whether he would like to come to the university's psychology lab and let them run some tests on him. How could Conrad possibly remember all the entrees, how each steak should be cooked, the salad dressings, the starches, and the special requests (hold the croutons) for 19 people? And how could he remember, as a good waiter must, to serve the right order to the right person? Anders Ericsson, a young Swedish psychologist recently involved in memory research, would be joining the university faculty soon, and Polson thought that he would be interested in exploring these questions with the waiter. Conrad said he would be glad to cooperate. He was always on the lookout for ways to increase his income, and Polson told him he would receive $5 an hour to be a guinea pig.

Conrad, of course, was not the first person with an extraordinary memory to attract attention from researchers. Alexander R. Luria, the distinguished Soviet psychologist, studied a Russian newspaper reporter named Shereshevskii for many years and wrote about him in *The Mind of a Mnemonist* (Basic Books, 1968). Luria says that Shereshevskii was able to hear a series of 50 words spoken once and recite them back in perfect order 15 years later. Another famous example of extraordinary memory, the conductor Arturo Toscanini, was known to have memorized every note for every instrument in 250 symphonies and 100 operas.

For decades the common belief among psychologists was that memory was a fixed quantity; an exceptional memory, or a poor one, was something with which a person was born. "No amount of culture would seem capable of modifying a man's general retentiveness," wrote William James in *The Principles of Psychology* (1890). "This is a physiological quality, given once and for all with his organization and which he can never hope to change."

This point of view has come under attack in recent years; expert memory is no longer universally considered the exclusive gift of the genius, the abnormal, or the idiot savant. "People with astonishing memory for pictures, musical scores, chess positions, business transactions, dramatic scripts, or faces are by no means unique," wrote Cornell psychologist Ulric Neisser in *Memory Observed* (1981). "They may not even be very rare.'' Some university researchers, including Polson and Ericsson, go a step further than Neisser. They believe that there are no physiological differences at all between the memory of a Shereshevskii or a Toscanini and that of the average person who makes a grocery list and then forgets to take it with him when he leaves the house. The only real difference, they believe, is that Toscanini trained his memory, exercised it regularly in his area of expertise, and wanted to improve it.

Like many people with his capacity to remember, Toscanini may also have used memory tricks called mnemonics. Shereshevskii, for example, employed a technique known as *loci*. As soon as he heard a series of words, he mentally ''distributed'' them along Gorky Street in Moscow. If one of the words was ''orange,'' he might visualize a man stepping on an orange at a precise location on the familiar street. Later, in order to retrieve ''orange,'' he would take an imaginary walk down Gorky Street and see the image from which it could easily be recalled. Did the waiter at Bananas have such a system? What was his secret?

John Conrad was born in Boulder and has never moved away. He lives in a trailer, several blocks from the one his parents have lived in since 1951. His mother is a hospital nurse and his father works in a warehouse at the University of Colorado. Conrad attended a Catholic school for nine years and he attributes part of his memory skills to the kind of education he received there: The teachers fired a lot of information at him quickly and he was forced to listen hard.

Conrad is short, handsome, proud, and acts something like a host on a television game show. The two most striking things about him are his announcer's voice and the fact that he seems at least 10 years older than 25. Even his trailer has the sober decor one associates with middle age. He speaks quickly, clearly, articulately, and tries always to talk in complete sentences. As an adolescent, his heroes were television newscasters. Since developing his memory, he feels that his ability to speak has improved considerably, because his mind is ''working in a far more organized manner.''

Ericsson and Polson, both of whom have tested Conrad over the past two years, believe that there is nothing intellectually outstanding about him. When they began testing Conrad's memory, his digit span was normal: about seven numbers. His grades in college were average. It took Conrad 17 semesters to receive his B.S. in environmental biology, but this was largely because he worked full-time at Bananas to earn his tuition and make the monthly payments on his trailer.

Conrad himself says that he is unexceptional mentally (his IQ has never been measured), but he has compared his earliest memories with others' and has found that he can dredge up things that many people can't. His first distinct memory is of lying on his back and raising his legs so that his mother could change his diapers. As a high-school student he didn't take notes in class—he says he preferred watching the girls take notes—and he has never made a list in his life. "By never writing down a list of things to do, and letting it think for me," he says, "I've forced my memory to improve."

Conrad does believe that his powers of observation, including his ability to listen, are keener than most people's. Memory, he says, is just one part of the whole process of observation. "I'm not extraordinary, but sometimes people make me feel that way. I watch them and realize how many of them have disorganized minds and memories and that makes me feel unusual. A good memory is nothing more than an organized one."

One of the first things Conrad observed at Bananas was that the headwaiter, his boss, was "a very unpleasant woman." He disliked being her subordinate, and he wanted her job. The only way he could get it was by being a superior waiter. He stayed up nights trying to figure out how to do this; the idea of memorizing orders eventually came to him. Within a year he was the headwaiter.

Conrad began his memory training by trying to memorize the orders for a table of two. There are 60 items on the menu at Bananas, but the waiter is only really challenged when customers order complete dinners. Steak dinners are the most challenging, and it is Conrad's ability to recall these orders that Ericsson and Polson have tested in the lab. On the lab's menu there are only eight steaks, cooked five different ways, four salad dressings, and three starches. Orders are generated by a computer. Cards with pictures of people's faces pasted on them represent the diners.

Although there are no distractions in the laboratory, Conrad says that it is far easier to memorize the orders in the restaurant. In the lab, Ericsson and Polson have given Conrad up to 16 orders as quickly as possible: He can absorb and repeat them in about eight minutes. At Bananas, he says, "people take forever to order. I encode the first five orders for a table of eight and the sixth person wants to have a conversation with me. While we are talking, I am reviewing the first five encodings." Conrad believes that he could do a table of up to 30 at Bananas before his system would start to break down.

Conrad's ability may seem awesome. In part, that is because a trained mind can do things far more easily than reading a detailed description of the mental processes suggests. Conrad has also been practicing and embellishing his skills for a number of years.

He starts by associating the entree with the customer's face. He might see a beefy set of jowls and hear "I'd like a big Boulder Steak." Sometimes, Peter Polson says, "John thinks a person looks like a turkey and that customer orders a turkey sandwich. Then it's easy."

Two years ago, after Conrad had finished waiting on that lucrative table of 19, he went back to the kitchen, where he writes up the orders for the cooks. He wrote down 18, and then realized that he had completely forgotten the last one. He scanned his memory and couldn't retrieve a thing. He studied the menu, but nothing came to him. Finally, he went back out to the dining area and stood quietly for several moments, unobtrusively looking at the woman whose order he had forgotten.

"I can remember her perfectly today," he says. "She was a beautiful black-haired lady with dark skin. I studied her and suddenly a certain look came into her eyes—a blank stare across the table—and that was the same look she'd given me when I took her order. Something clicked. I knew she had ordered roast duck and that was that." Once he could recall the entree, the rest of her order fell in line behind it. Because the primary association he makes is the entree with the face, it doesn't matter if people shift positions at the table in an effort to fool him. Seating arrangements may change, but faces don't.

In memorizing how long meat should be cooked, the different salad dressings, and starches, Conrad relies on patterns of repetition and variation. "John breaks things up into chunks of four," Ericsson says. "If he hears 'rare, rare, medium, well-done,' he instantly sees a pattern in their relationship. These patterns seem to exist in his long-term memory before he ever hears the orders spoken. So when he does hear them, he simply encodes them using one of these patterns and goes on to something else."

The entree is the key to Conrad's system. Everything else in the order is associated with it. (The entree is obviously the most important food item as well. If he blows a salad dressing, the cooks can fix that fast. If he forgets a steak order—or brings out well-done instead of rare—he has probably blown his tip.) One of the methods he uses is to connect a cut of meat with the degree to which it is to be cooked, and then visualize the whole thing. If he hears "rib-eye, well-done," he sees a burned piece of meat. If he hears "filet, rare," he sees himself, for this is what he would order at Bananas. As a simultaneous backup system for a complex order, he attaches the letters (m.r., medium-rare) to the entree "like a tail on a dog." As an additional backup, he makes a mental graph. An easy progession—rare, medium-rare, medium, well-done—would take the shape of a steadily ascending line on his graph. A more difficult order—medium, well-done, rare, medium—would resemble a mountain range.

The simplest part of Conrad's system is his encoding of salad dressings. He uses letters: B for blue cheese; H for the house dressing; O for oil and vinegar; F for French; T for Thousand Island. A series of orders, always arranged according to entree, might spell a word, like

B-O-O-T, or a near-word, like B-O-O-F, or make a phonetic pattern: F-O-F-O. As Ericsson says, Conrad remembers orders, regardless of their size, in chunks of four.

In general, the researchers have found that Conrad is able to retain orders in his long term-memory for a day or so.

Conrad says that the final category—starches—is the trickiest because at Bananas he often doesn't have to commit the starch orders to memory at all. The vast majority of diners want a baked potato with steak, and rice with chicken. In the lab, however, the professors make things harder for him. When he hears "rib-eye with rice," he forms a mental image of this and encodes it as "unusual" or "different." As a backup to this system, he again looks for patterns in the order sequence. As another backup, he remembers starch orders as a series of couplets: Orders one and four are the same; so are two and three. Two couplets are easier for him to recall than four separate items. If all else fails—if he can't remember either the complete individual order or the complete category—he tries to remember what the person sitting next to the forgotten order wanted. This usually provides clues that eventually trigger the information. Rarely, very rarely, does he go back to ask for an order again.

One of the most intriguing things about Conrad is the number of ways he can associate material. Another is the speed with which he is able to call it up from memory. In the lab, he can take five orders and repeat them back perfectly in 40 seconds. Ericsson and Polson have also tested him with animals, units of time, flowers, and metals. At first, his recall was slow and uncertain. But with relatively little practice, he could retrieve these "orders" almost as quickly as he could food. A few years ago, he quit Bananas and went to work at another restaurant for a short time. On his first day, after briefly studying the menu, he began waiting on tables without pen, paper, or problems.

"The difference between someone like John, who has a trained memory, and the average person," says Ericsson, "is that he can encode material in his memory fast and effortlessly. It's similar to the way you can understand English when you hear it spoken. In our tests in the lab, he just gets better and faster. What we've seen so far suggests that people have no fixed memory capacity. It can constantly be improved."

2500 words

Write your ending time here: ______________________

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Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. John Conrad's memory.
   b. how memory works.
   c. mnemonics.
   d. memory improvement.

2. The main idea is that
   a. anyone can improve his or her memory.
   b. John Conrad has an amazing memory.
   c. some people have better memories than others.
   d. memory depends on the use of tricks.

Details

3. A mnemonic is a
   a. memory trick.
   b. locus.
   c. digit span.
   d. type of memo or note.

4. Conrad starts by
   a. memorizing the dinner in order of its courses: soup or salad, meat, vegetable, dessert.
   b. encoding patterns such as B-O-O-T.
   c. dividing orders into couplets.
   d. associating the entree with the customer's face.

5. The current theory of memory is that
   a. there are no physical differences in people's memories.
   b. some people are born with better memories than others.
   c. memory is related to intelligence.
   d. memory is related to amount of education.

6. Conrad attributes his memory to
   a. luck.
   b. a high IQ.
   c. native talent.
   d. organization.

Inferences

7. The reason John Conrad was tested by psychologists was that
   a. he was such an amazing person that they wanted to know him better.
   b. the psychologists wanted to use him to learn more about memory.
   c. American psychologists wanted a mnemonist, since the Soviets had one.
   d. they wanted to give him a way of earning money.

8. The psychologists would probably say that Conrad
   a. has reached the limit of his memory capacity.
   b. has room for still more memory improvement.
   c. will become more forgetful as he grows older.
   d. is unusually bright and talented.

9. The article implies that
   a. the human memory has no limits.
   b. most people have not reached their limits.
   c. some things are more easily memorized than others.
   d. there are physical differences in people's memories.

10. The two key aspects of memory seem to be
    a. storage capacity and speed of retrieval.
    b. mnemonics and encoding patterns.
    c. retention and physiology.
    d. intelligence and practice.

CRITICAL THINKING QUESTIONS

1. Think of a time in your life when you were motivated to remember something complicated and describe what you had to remember, what the motivation was, and the techniques you used to remember the information.

2. Take a grocery list or other list of fifteen items and try to use the technique similar to Conrad's to memorize them.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **idiot savant** (82)
   a. intellectual who lacks common sense
   b. person born with an abnormally small brain
   c. person born with a hormone imbalance
   d. retarded person with one remarkable talent

2. **loci** (83)
   a. places
   b. faces
   c. colors
   d. numbers

3. **embellishing** (84)
   a. forgetting
   b. ignoring
   c. adding to
   d. denying

4. **lucrative** (85)
   a. unrewarding
   b. ugly
   c. profitable
   d. friendly

5. **unobtrusively** (85)
   a. loudly
   b. without attracting attention
   c. with a heavy heart
   d. foolishly

Read this article. Write your starting time here: ________.

12

Bartering Is Back

Betsy Meyers

A 62-YEAR-OLD WIDOW needed her porch stairs repaired. She called her neighborhood labor exchange seeking carpentry help. In return, she offered her services as an expert seamstress. Down the street, the local printer needed his shop repainted. He called his business trade exchange for a referral. A few miles away, a large manufacturer was negotiating a trade-off of his surplus inventory to acquire some much needed raw materials. In all these cases, not one dollar was exchanged in payment.

What's happening here?

The seamstress, the small businessman and the manufacturer are all participating in the current booming trend of bartering.

The idea of exchanging goods and services is as old as mankind. Even Manhattan was once a commodity to be traded for a few trinkets. A century ago, the kindly rural doctor took in chickens and vegetables for delivering babies and tending to the sick. Today, informal bartering continues to take place between individuals who know each other. Doctors, lawyers and other professionals often exchange their services for their clients' special skills or merchandise. Young mothers form babysitting groups and car pools; co-ops are staffed by their members; neighbors trade auto repairs for piano lessons. At another level, kings, countries, and conglomerates barter across national and political boundaries. Deals run into millions of dollars as one country's natural resources are traded for another's highly desired construction equipment, or a multi-national corporation trades a year's overproduction for a massive amount of advertising space or hotel rooms for its traveling salespeople.

What is new about bartering is the recent emergence of two forms designed to serve the great middle—the average citizen and small business person who, as inflation and tight money squeeze income and profits, are finding bartering an excellent alternative to get the things they want and need.

Betsy Meyers, "Bartering Is Back," *Rainbow*, Fall 1981, pp. 46–49.

GRASS ROOTS BARTERING GROUPS

Beyond bartering between individuals who already know each other, numbers of area-wide grass roots groups—also known as services exchanges, skillbanks or labor exchanges—are being established to increase members' spending power, combat inflation, and promote a sense of community by helping each other out.

Indeed, grass roots bartering seems to be coming of age. David Tobin of The Barter Project, part of an independently funded center designed to increase citizen involvement, notes bartering's increased popular interest and more organized approach. "When money is tight, people are more open to alternatives," he explains. "And they increasingly understand what bartering can do. As government cutbacks make bartering timely, it also makes people more self-reliant, more self-sustaining. Neighborhoods and communities can function independent of government funding and philanthropic organizations. Bartering groups are now more sophisticated and likelier to last."

The simplest form of a grass roots bartering group can be found at the monthly meetings of the Grass Valley G-Plan Barter Group. There, over half of the 180 members regularly congregate to share a potluck supper, hear a lecture on homestead subjects such as building a solar greenhouse or hot-water heater, but come mostly to trade. As Bhakti Smith, a board member, describes it, "Each member has a turn to place a need or offer in front of the group—home-baked bread for plants and seeds, fence repair for casseroles."

Sometimes, community barter groups grow beyond their original intention.

In Marin County, The Barter Network started out as an aid to resident senior citizens. As Cleo Linn, director, put it, "It was a way for seniors to get help, but not put them in the position of accepting charity. By contributing their often vast experience and skills, they feel they also contribute worthy services to the community." Since its inception in 1979 by the local chapter of the American Association of University Women The Barter Network quickly grew to over 300 members to include people of all ages and backgrounds. Funded by a small grant from a local foundation, volunteer members keep the office running. Registered members call in for their needs—be it haircuts, transportation or income tax preparation. Credits for hours worked (rated on skill levels) and debits (hours used) are recorded in a central "bank" for each member's account. Now under the umbrella of the Marin YWCA, Linn points out grass roots bartering's valuable side benefits. "It gets people involved with each other. New neighbors join to find out what's happening in the community. Our monthly social gatherings help get people together and break down the fear of not trusting each other."

In the San Fernando Valley, volunteer David Downing heads up a similar free service in Useful Services Exchange (USE). He lists more than 800 services, ranging from skating instruction to emergency transportation available from and to members. Downing, an energetic one-man booster of the concept, coordinates the trade for letter writing and home repairs, Spanish translations and child care.

Another type of community barter project is Free For All, headed by Richard Johnson. Serving the greater Los Angeles area, Free For All charges a one-time registration fee to join, and annual dues. But, Johnson, who started the project in 1975, says it's not a money-making proposition. The fees go toward publishing a membership directory and newsletter, and for office expenses. Members freely share their skills but limit the number of hours per week they are available. Members exchange services without charge, but the receivers pay direct costs for materials and expenses.

Sometimes members offer merchandise at their costs rather than services in order to participate. Such merchandise has included records, vitamins, plants, survival gear, telephone answering machines and trampolines. Johnson keeps no records on hours swapped, relying instead on the good sense of his members. "Complaints," he notes, "are remarkably few."

Business Trade Exchanges

Another area of bartering that is experiencing rapid growth is the more complex business trade exchange or barter club. Thanks to high-speed computers to keep track of the record-keeping, trade exchanges can profitably serve the small to medium-sized business and self-employed professional.

Designed for the business owner, these exchanges enlist businesses in the community as members who then trade goods and services with each other. The exchanges usually charge an initial set-up fee, annual dues and a small percentage on monthly transactions. Depending on the exchange, fees are payable in all cash or part cash, part trade credits.

A member accumulates trade credits by taking in other members' business; he spends them by purchasing other members' goods and services. This revolving system of credits and debits has several key features. For one, cash outlay is reduced, freeing it for other uses.

Another significant element of the trade exchange system is that it steers new customers in the door—customers that would not normally come in. Since the other members have to spend their credits, it makes sense for them to use the professional and business services listed in the exchange's directory. In addition, there's the ripple effect. Satisfied customers will recommend more customers, including those who pay cash. Therefore, if a trade exchange is able to refer more business, increased profitability occurs with no increase of overhead.

Almost every conceivable business and profession may be involved in bartering. M. J. McConnell, president of Business Exchange

(BX), a California-based trade exchange, tells the story of a local college that needed some remodeling done. They offered ten scholarships in exchange for the contractor's work. The college got ten new students and some newly refurbished offices and classrooms—all on barter club credits.

The larger barter clubs have hook-ups to Visa and Bank-Americard to charge the cash portion of the transaction, tips and sales taxes. This tie-in also provides instant credit clearance for customers spending over established limits.

With the aid of a computer, trade exchanges keep track of each purchase and sell transaction and issue monthly statements similar to bank statements. Periodically updated trade directories and advertising mailouts for members especially interested in receiving credits or offering specials are also sent out. The trade director further services the accounts by making referrals or getting something on request which is not normally available.

The question of tax advantages inevitably comes up concerning trade exchange transactions. The IRS has been quite firm on this point. "Income is taxable from whatever source derived." (Section 61, IRS Code) Therefore, credits must be declared as income and are taxable. Of course, state sales tax and tips are usually paid for in cash or charged on bank cards at the time of purchase. As McConnell points out, "Uncle Sam, the State and the waiter are not trade exchange members." On the other hand, if the transaction involves a normal business expense, it can be deducted just as a cash purchase would be.

Joe Weiss, deputy administrator for International Association of Trade Exchanges, an industry trade association, feels now that trade exchanges have outgrown their infancy. "The networks have grown stronger with quality of membership increasing all the time." Yet, he warns, business bartering, even in today's economy, "is a supplement to cash, not a substitute."

Bartering is not meant to replace cash but, rather, is a creative way to ease the high cost of living. So, whether by informal arrangement among friends, a community project or service organization, or today's highly sophisticated trade exchanges, bartering does offer an alternative to paying out hard-earned cash in times of tight money. As millions are discovering—there's a barter way!

1500 words

Write your ending time here: ____________________

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Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. the limitations of bartering.
   b. the history of bartering.
   c. how to barter for goods.
   d. the advantages of bartering.

2. The main idea of the article is that
   a. bartering is an alternative to money that everyone should consider.
   b. bartering has been used since the beginning of time.
   c. creating a bartering exchange is easy.
   d. using bartering rather than money saves paying taxes.

Details

3. Bartering is becoming more popular because
   a. it is tax free.
   b. people have less cash available because of inflation.
   c. laws have finally made bartering legal.
   d. of increased unemployment.

4. Informal bartering
   a. is becoming less popular.
   b. often involves multimillion-dollar deals.
   c. frequently occurs between governments.
   d. usually occurs between people who know each other.

5. According to the article, bartering
   a. makes people too dependent on their neighbors.
   b. takes advantage of elderly people.
   c. makes people more self-reliant.
   d. often forces people to trade for things they don't really want or need.

6. The newest kind of bartering exchanges were created to
   a. serve multinational corporations.
   b. aid the small- to medium-sized businesses.
   c. provide an outlet for government surpluses.
   d. encourage communities to organize into small businesses.

Inferences

7. From the article we can infer that bartering
   a. is illegal in some states.
   b. should be a part of everyone's economic program.
   c. is used by the government to buy goods for the military.
   d. is now more popular than purchasing goods.

8. From the article we can infer that using bartering exchanges
   a. saves time.
   b. is expensive.
   c. is the only way to barter legally.
   d. is new.

9. From the article we can infer that
   a. bartering is becoming more complex than when neighbors exchanged goods.
   b. bartering is frowned upon by the government.
   c. people who barter tend to be poorer than those who don't.
   d. bartering will undercut the stability of the dollar.

10. We can infer that
    a. eventually the United States economy will be based on bartering.
    b. bartering is based on the theory of supply and demand.
    c. bartering never involves the use of cash.
    d. all bartering systems work the same way.

CRITICAL THINKING QUESTIONS

1. What services or products could you use to barter?

2. How could the IRS discover whether someone was bartering goods and services and not reporting this on their income taxes?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **commodity** (90)
   a. tax-exempt institution
   b. item with a price discount or rebate
   c. item to be bought, sold, or traded.
   d. agricultural product

2. **conglomerate** (90)
   a. dictatorship
   b. third-world country
   c. common market
   d. corporation formed from many different companies

3. **philanthropic** (91)
   a. charitable
   b. tax-supported
   c. political
   d. social

4. **congregate** (91)
   a. stay away
   b. leave
   c. gather
   d. write

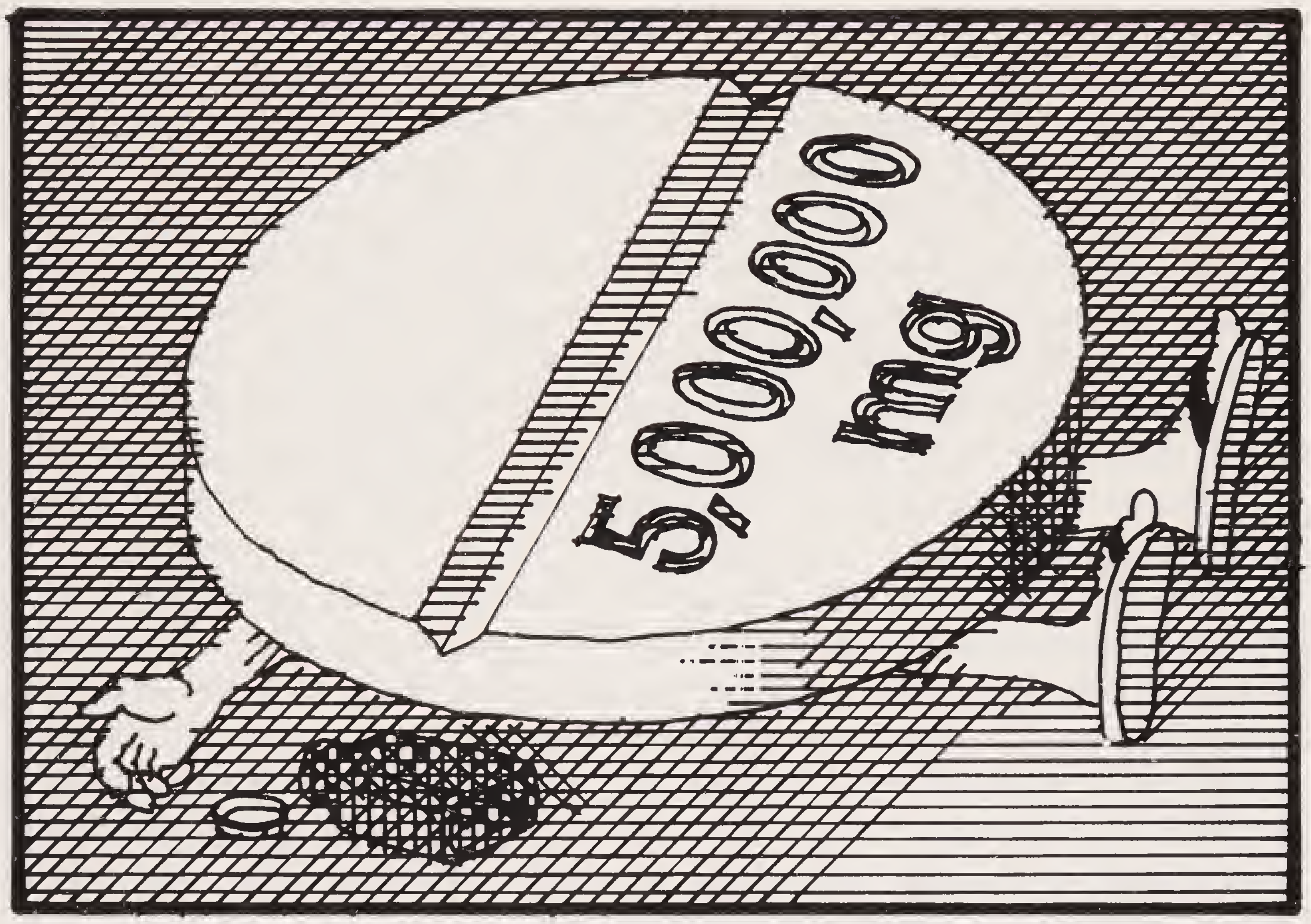
5. **inception** (91)
   a. end
   b. beginning
   c. audit
   d. competition

Read this article. Write your starting time here: ________.

13

Megavitamin Madness

Jean Mayer



TOO MUCH OF A GOOD THING," said Mae West, "is wonderful." There are times when that is true, but in most situations, alas, the saying of that fine author Anonymous is more accurate: "Too much is enough." The latter is certainly true when you're speaking of food and nutrition, from apples and avocados to zucchini and zinc.

I never cease to marvel at the mental gymnastics of people who avoid processed foods, commercially grown fresh products and synthetically produced vitamins in the belief that they will be better off without all those "chemicals," and then down massive doses of "natural" vitamins in the equally firm belief that if a little of mother nature's own is essential to life, then more will make them the picture of robust good health. After all these years of hearing it, my mind still boggles!

Jean Mayer, "Megavitamin Madness," *Family Health*, Feb. 1980, pp. 48–49. Reprinted from *Family Health*, February 1980 by special permission. © 1980 Family Media, Inc. All rights reserved.

First of all, vitamins, like minerals, are chemicals. There is absolutely no difference in the chemical structure of the "natural" vitamin C extracted from rose hips and the chemical structure of the "synthetic" vitamin C made by chemists in any drug company. Also, while most substances are harmless at a very low level of intake, all substances—even elements that are essential to life—can become dangerous if you overdo them. Take water for example. Six or eight glasses a day will keep your body in good fluid balance. But you can also drown in it.

Figuratively speaking, it's possible to drown in vitamins, too. A and D are the prime examples. Vitamin A is essential for vision and vitamin D for the mineralization of bones and teeth. The U.S. Food and Drug Administration's daily Recommended Dietary Allowance (RDA) for A is 5,000 I.U. (International Unit is the standardized measurement); for D, it's 400 I.U. However, both A and D are fat-soluble, which means they can build up in the body. Prolonged intakes of vitamin D at only five times the RDA can cause growth retardation and calcium deposits in soft tissues in children, and kidney damage in adults. At 15 to 20 times the RDA, vitamin A produces headaches, nausea and diarrhea. In the long run, very high doses of both vitamins are devastating.

Here's why: When you take any vitamin greatly in excess of the dosage necessary to prevent deficiency, it stops acting like a vitamin in the body. Though each vitamin has its own special role to play, and some have more than one, they all have the same general function: They act as "coenzymes." In the cells, these "coenzymes" join up with proteins called "apoenzymes" to form complete enzymes, catalysts that speed up normal, necessary metabolic reactions. However, cells can manufacture just so many "apoenzymes." That means that in mega-doses (mega means "great" or "huge"), many vitamins cannot perform their natural function, but instead act like a drug.

Some people argue that because individuals vary greatly in their need for nutrients, it cannot necessarily be stated that any given amount is too much; that it is all relative. But since there is little solid information on what is the *optimal* intake of any essential nutrient in healthy individuals, it would be impossible to give guidelines that take these proportional needs into account. Just as with other drugs, the reaction to different vitamin dosages varies, with some people better able than others to tolerate large amounts. While we do know very specifically what the toxic level is for vitamins A and D, we are far less sure about vitamin E, even though it, too, is fat-soluble, and we still don't understand the water-soluble vitamins, the C and the B group, which the body can't store.

These are the uncertainties that open the door for megavitamin enthusiasts.

Megavitamin proponents argue that since the optimal intake is unknown, but must fall somewhere above that needed to prevent deficiency and to maintain normal growth, development and good blood levels—and that these nutrients do not seem to be toxic in high doses—what could be the harm in taking them in whopping amounts when it may lead to roaring good health? As the little lady who suggested chicken soup for an accident victim remarked, "It can't hurt." But in this case, they're wrong. The evidence is accumulating that megavitamins sometimes do hurt.

Take vitamin C, for example, which some people use in doses of anywhere from 1 to 4 grams (1,000 to 4,000 milligrams) to prevent or lessen the symptoms of the common cold. Vitamin C does indeed have a mild antihistaminic effect, helps stop runny noses, sneezing and slightly reduces the severity of the cold. Yet a regular antihistamine from the drug store might be a better choice because vitamin C also acts as a "reducing agent," speeding up the metabolism of some substances, inhibiting others and destroying still others. The body copes with such an excessive "reducing agent" by increasing its breakdown of foods and nutrients and the elimination of them. When this happens, the level of uric acid may rise in the urine and could precipitate an attack of gout in people with a genetic tendency to that disease. Too much vitamin C has been known to partially destroy the vitamin B12 in foods and can also cause the formation of kidney stones in predisposed individuals, menstrual bleeding in pregnant women and adverse effects on growing bones.

Even vitamin E, which appeared to be an innocuous enough substance for many years, has been shown to be dangerous when taken in large amounts by some people. In the search for protection against heart disease and in the pursuit of youthful strength and sexual vigor, some subjects have taken 40 grams (40,000 milligrams) daily for months without ill effects. However, others have experienced headache, nausea, giddiness, fatigue and blurred vision on as little as 300 milligrams a day. One result of excessive vitamin E may be a relative deficiency of vitamin K, which is necessary for normal blood clotting. And perhaps the unkindest finding of all is that prolonged intake of 4 to 12 grams of vitamin E, once touted as an aphrodisiac substance, may actually reduce gonadal function. (The gonads, of course, are the testes and the ovaries, which control the production of sperm and egg cells.)

Megavitamin therapy is also being used in the treatment of schizophrenia, and I find this particularly sad. Schizophrenia is a serious mental disorder that we do not as yet understand, although there is increasing speculation among psychiatrists that the root trouble may be biochemical rather than emotional. Even its diagnosis may require a long period of observation, for at the beginning the symptoms are much the same as those of some other mental illnesses. Schizophrenia is also difficult to treat, for, like arthritis, it has periods of spontaneous remission.

Megavitamin theorists propose that the faulty metabolism in schizophrenics can be brought under control with doses of niacin, other vitamins, hormones, minerals, special diets and drugs. It has even been suggested that enriching our foods with niacin to the level of one gram a day would prevent most cases from developing. (The highest RDA, for young men ages 15 to 22, is 20 milligrams!) But in fact, mega-doses of niacin can be harmful. A gram a day over a long period can cause skin changes, jaundice, gastrointestinal ulcers, abnormal liver functions, increases in blood levels of uric acid and lowered glucose tolerance. Paradoxically, high doses of niacin may also produce psychological changes that mimic the dementia that is one of the symptoms of pellagra, a niacin-deficiency disease.

It may well be that we shall find that some mental disorders are caused or influenced by metabolic abnormalities. The general theory is attractive and not implausible, but we need to know for sure. The risk inherent in megavitamin therapy and the rejection by many patients of more traditional treatment programs must be balanced by demonstrated benefits.

If you asked me to sum up my feelings about megavitamins or, for that matter, mega-doses of any nutrient, I would answer with this question: Is it really good sense to take gigantic amounts of *anything*?

1300 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. preventing diseases with vitamins.
   b. the dangers of megavitamins.
   c. the recommended daily vitamin intake.
   d. the advantages of taking vitamins.

2. The main idea of the article is that
   a. you should consult a doctor before taking vitamins.
   b. too much vitamin intake is dangerous to your health.
   c. vitamins A and D can build up in the body.
   d. vitamin C prevents colds.

Details

3. Too much vitamin D
   a. cannot be taken.
   b. causes headaches.
   c. causes nausea.
   d. can cause retardation and kidney damage.

4. According to the author, vitamin C
   a. lowers uric acid levels.
   b. is fat soluble.
   c. has a mild antihistaminic effect.
   d. all of the above.

5. Doctors now know that vitamin E may
   a. be water soluble.
   b. reduce the chance of skin cancer.
   c. increase fertility.
   d. decrease fertility.

6. Water-soluble vitamins
   a. cannot be stored in the refrigerator.
   b. include vitamins A and D.
   c. cannot be stored by the body.
   d. are more likely to be toxic than fat-soluble vitamins.

Inferences

7. Using megadoses of vitamins
   a. might not help but cannot harm you.
   b. can make you healthier if combined with exercise.
   c. can aggravate an existing medical problem.
   d. increases growth.

8. Medical research has shown that doses of megavitamins
   a. are usually harmless when taken for a short period.
   b. help reduce all of the symptoms of schizophrenia.
   c. might have long-range ill effects.
   d. rarely interact with one another.

9. The author's attitude toward megavitamin intake is
   a. neutral.
   b. positive.
   c. negative.
   d. impossible to determine from the article.

10. The author feels that many advocates of megavitamin doses
   a. have not done enough research on long-range effects.
   b. probably own vitamin companies.
   c. are in danger of dying from vitamin overdoses.
   d. have not done enough to convince the public of the importance of megavitamins.

CRITICAL THINKING QUESTIONS

1. What should be the role of government in the sale of vitamins? Support your argument.

2. Discuss some examples of situations in which the health products industry has taken advantage of the average person's lack of health information for financial gain.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **innocuous** (99)
   a. dangerous
   b. evil
   c. harmless
   d. beneficial

2. **touted** (99)
   a. rejected
   b. ignored
   c. sold
   d. publicized

3. **dementia** (100)
   a. sanity
   b. insanity
   c. intelligence
   d. health

4. **implausible** (100)
   a. unlikely
   b. probably
   c. impossible
   d. obvious

5. **inherent** (100)
   a. avoidable
   b. outside
   c. far away
   d. basic

Read this article. Write your starting time here: ________.

14

Native Tongues

Charles Berlitz

On the world island where we all live, it is increasingly important for us to understand the cultures and languages of our neighbors and, through this, how they think. We owe it to ourselves to become more familiar with the languages, and therefore with the cultural outlook, of our neighbors on our planet Earth.

At this moment at least 2,796 separate languages are being spoken on our planet.

Although most of the important world languages have evolved in the last few hundred years, a number of ancient ones are still in use or have been revived. Speakers of these ancient languages have had to adopt the modern technical vocabulary directly or modify it to their language. In Hebrew the decision for "electricity" was to use the Old Testament word hashmal, referring to the radiating halo surrounding the vision of the Lord. The Navaho for "automobile" is chidi, from the noise made by the early Ford cars warming up on a cold morning on the reservation—chidi-chidi.

Of all the spoken languages still in use, Basque, a unique tongue spoken in northern Spain and southwestern France, may be the most difficult to learn, being related to nothing on earth except to a small language pocket in the Caucasus Mountains. Its extremely difficult structure and vocabulary have elicited the Spanish proverb: "When God wished to punish the devil, he condemned him for seven years to study Basque."

Basque's uniqueness is an exception; most languages are related to others, having been spread through warfare and conquest.

Take English, for example. In the eleventh century England was speaking Anglo-Saxon, a Germanic language. After the Norman Conquest of England in 1066, French-speaking conquerors established themselves as the ruling caste.

As a result, the good life of the Norman French overlords is echoed in English speech today, for instance in everyday terms for meat. Meat

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From the book *Native Tongues* by Charles Berlitz. © 1982 by Charles Berlitz. Reprinted by permission of Grosset & Dunlap, Inc.

prepared for the table is still referred to by its modified French name, while the animal from which the meat comes keeps its Saxon name.

Animal	**Meat for the table**	**Modern French**
steer	beef	boeuf
pig	pork	porc
calf	veal	veau
sheep	mutton	mouton
chicken	pullet	poulet
deer	venison	venaison (from "hunting")

The Saxons did the raising and slaughtering of the animals, while the Normans enjoyed the eating thereof.

Many words that came into English at the time of the Norman Conquest indicate the position of the Saxons. The following French words were adopted into English at that time: peasant, trespass, punish, oppress, prohibit, discipline, tax, judge, penalty, prison, torture, supplication, exile, treason, rebel, dungeon, execution. The word mortgage (literally "death-pledge") is another Norman contribution to the English vocabulary.

Bodily substances that are permissibly expressed by English pronunciation of the adopted French words urine and excrement are still considered shocking and often unprintable in their original Saxon forms.

By the fourteenth century, English had again become the written as well as the spoken language of England. Edward I, himself a descendant of the Norman kings, on one occasion formally accused the French king of wanting to wipe out the English language.

The fact that languages are related carries hidden benefits. During World War I, a Portuguese soldier offered to teach a French soldier a thousand words of Portuguese in less than one minute for 100 francs. "Look," said the Portuguese, "all the words you have in French that end in -tion are the same in Portuguese, except that they end in -cao. There are over a thousand of them. One hundred francs, please."

Since English is derived from both French-Latin and Germanic Anglo-Saxon, it has more common words in two separate language groups than any other modern language. Thousands of English words can easily be converted into French, Spanish, Italian, or Portuguese.

English words ending in -tion have exact equivalents in French and are spelled the same. In Spanish the -tion words end in -cion. In Italian the ending is -zione. In Portuguese the ending is -cao.

English nouns ending in -ty become French by changing the -ty to -te, to -dad in Spanish, to -ta in Italian, and to -dade in Portuguese.

Words that end in -able or -ible in English can be turned into

French or Spanish by using the same endings, into Italian by changing the endings to -abile or ibile, and into Portuguese by using -vel.

Many English adverbs ending in -ly are the same in the Latin languages, except that they end in -ment in French and -mente in the others.

English nouns ending in -ty become French by changing the -ty to -te, to -dad in Spanish, to -ta in Italian, and to -dade in Portuguese.

Most European languages have a built-in grammatical preoccupation with the gender of nouns.

Among the Indo-European languages, English puts the least emphasis on grammatical gender of nouns. Chinese is probably the most unisex in its pronouns of all languages, having the same word for "he," "she," and "it."

No one has satisfactorily explained how all objects become divided into categories based on sex. This language concept may have started by classifying living things and then transferring classification to objects or forces that seemed male or female.

"Child" is understandably neuter in German, but the word for "girl," Madchen, is paradoxically neuter, and so is "wife"—Weib, a word also used for "female" or "woman." As Mark Twain said: "In German, a young lady has no sex, but a turnip has."

Spanish has masculine and feminine words for "we"—nosotros and nosotras. Women, however, frequently use the masculine form even when speaking of themselves as a group, so strong is the influence of machismo in Spanish.

In virtually all languages, certain innocent-sounding words may bring on a conversational shock. In French one must be careful with the word fille, which means "girl." You must qualify it as jeune fille ("young girl") or petite-fille ("little girl"). Without these qualifying words you are suggesting that the fille you are talking about is a "woman of easy virtue."

In Spanish, to use the sacrosanct word madre, "mother," is to live dangerously. Tu madre ("your mother") suggests a common insult—an involved inference referring to questionable sexual practices by the mother of the person addressed.

The Semitic languages, of which Arabic and Hebrew are the principal survivors, are even more preoccupied with masculine and feminine gender than the European languages. Not only are the nouns, pronouns, and adjectives masculine and feminine, but even the verbs change gender. The simple expression "I love you" has six varieties in Hebrew, depending on whether the speaker is a male or a female, talking to a male or female, or to several males or females at the same time. If the males or females of such a group are mixed, the masculine gender predominates.

In Mexican the Mazateco have developed a private male language of long and short whistles which correspond to the syllables of certain words. Mazateco women are therefore unable to understand what the men are talking about and, so far, no male has apparently betrayed the secret.

If one did, the event might change Mazateco history. That contention may sound farfetched, but language has in fact determined the fate of nations.

In all of South America, more people speak Portuguese than Spanish because of a pope's decision 500 years ago designed to keep the peace between Spain and Portugal. In 1481, when Spanish and Portuguese seafarers were already beginning to explore the Atlantic, the reigning pope—hoping to keep peace between the two powers—issued a Papal Bull awarding to Portugal all undiscovered lands on a horizontal line south of the Canary Islands and all lands north of the line to Spain. In 1493, the pope changed the boundary line. He awarded the lands west of the 38 degree west longitude (all of South America) to Spain and those east of it to Portugal—prompting Francis I of France to remark: "I should like to see the passage in Adam's will that divides the New World between my brothers, Charles V of Spain and the King of Portugal."

Hiroshima and Nagasaki might have been spared the atom bomb if a single Japanese word had been translated differently. The word was mokusatsu, which can mean either "ignore," "withhold comment," or "have no comment." Before dropping the first atom bomb, the United States warned Japan of a new weapon and gave the Japanese government the chance to surrender in order to avoid overpowering destruction to its cities. The Imperial Government announced internationally that, pending cabinet discussion of the development, it was following a policy of mokusatsu. This verb was translated as "ignore" and the Bomb was dropped.

German almost became the official language of the United States of America. The Continental Congress at one time considered adopting a new language for the future United States. German was the most favored.

Nevertheless, when the proposition came to a vote, English was chosen as the language of the new republic—by the majority of one vote!

1500 words

Write your ending time here: ____________________

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Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   - a. languages.
   - b. the birth and growth of languages.
   - c. the use of gender.
   - d. the ways that language has changed our lives.
2. The main idea is that
   - a. wars can occur because of linguistic misunderstandings.
   - b. profanity differs in different cultures.
   - c. the use of gender differs among languages.
   - d. knowledge of languages is very important.

Details

3. The reason the author thinks we should learn languages is that they
   - a. enable us to travel and do business abroad.
   - b. help us understand the roots of our own language.
   - c. help us become truly educated people.
   - d. give us an insight into the cultures of our neighbors.
4. The most difficult language to learn may be
   - a. English.
   - b. Basque.
   - c. Swahili.
   - d. Chinese.
5. English is based primarily on
   - a. a variation of Latin.
   - b. Norman French.
   - c. a Germanic language.
   - d. Celtic.
6. Which language is *not* closely related to the others?
   - a. French
   - b. Spanish
   - c. Italian
   - d. Hebrew

Inferences

7. Words ending in -tion in English and French, -cion in Spanish, -zione in Italian, and -cao in Portuguese have
   a. their origins in Anglo-Saxon.
   b. the same part of speech.
   c. the same pronunciation.
   d. no relation to one another.

8. Terms like "tu madre" suggest that the culture using it
   a. reveres women.
   b. has a double standard.
   c. degrades women.
   d. believes in equality between the sexes.

9. The acceptability in English of French-derived words that would be considered obscene in their Anglo-Saxon forms is an example of the relationship between
   a. language and social class.
   b. the conquerer and the conquered.
   c. money and power.
   d. friends and enemies.

10. The author implies that use of the masculine pronoun to refer to both men and women may reflect
    a. a female-dominated culture.
    b. universal usage.
    c. a sexist culture.
    d. an unusual usage.

CRITICAL THINKING QUESTIONS

1. The author gives several examples of how language has affected the history of the world. Some linguists feel that peace could be achieved if only we all spoke the same language. Discuss the pros and cons of this idea.

2. Do you think the languages that place the most emphasis on gender come from cultures that are the most sexist? Support your answer with examples.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **caste** (103)
   a. democracy
   b. family
   c. voting bloc
   d. class

2. **paradoxically** (105)
   a. obviously
   b. incorrectly labeled
   c. not surprisingly
   d. in self-contradiction

3. **machismo** (105)
   a. excessive masculinity
   b. equal rights
   c. the mother-in-law
   d. feminism

4. **sacrosanct** (105)
   a. despised
   b. holy
   c. dishonored
   d. ordinary

5. **contention** (106)
   a. claim
   b. denial
   c. fact
   d. opinion

Read this article. Write your starting time here: ________.

15

Why People Make Mistakes

Donald Norman

I*N A HOTEL RESTAURANT, when the check came, I signed my name to it but couldn't remember my room number. So I looked at my watch."*

This example illustrates a typical slip of action among more than 200 that I have collected in two years. Slips are amusing and happen to all of us; except when they lead to embarrassment, they usually seem like harmless oddities.

But slips that occur in the conduct of certain tasks can be dangerous. An air-traffic controller once told a plane to taxi to the left runway when he meant the right. Such a left/right slip is the most common of verbal confusions, but in this case it could have led to tragedy (fortunately, it didn't). Forgetting to turn on headlights when driving a car at night is also common. The slip is usually caught before an accident occurs, but not always. Today, human error is one of the largest causes of accidents.

The founder of psychoanalysis, Sigmund Freud, analyzed errors primarily to discover a person's true beliefs or intentions. One case he examined involved the president of the lower house of the Austrian parliament, who opened a meeting by shouting, "I declare this meeting closed!" That act does seem to reveal hidden motives; as Freud noted, "The president secretly wished he was already in a position to close the sitting, from which little good was to be expected."

But I believe that the human mind is an exceedingly complex computer, and that slips can also occur when stray information throws off human information-processing systems. During Freud's era, the science of computation, information processing and control was primi-

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Donald Norman, "Why People Make Mistakes," condensed from *Psychology Today*, April 1980 and printed in the *Reader's Digest*, August 1980. Reprinted from *Psychology Today* magazine.
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tive, and Freud was not led to think about the nature of a human processing system that could contribute to errors. I interpret Freud in modern terms as saying that slips result from competition and intermixing among underlying mental-processing mechanisms, often working parallel to one another.

What about the pilot who lands a plane with the wheels still up—does he have a hidden wish to kill himself? It's possible, but simpler explanations are possible, too.

Most actions, I propose, are carried out by subconscious mechanisms. We will an action. The intention, once specified, releases control processes, or "schemas," that lead to the exquisitely timed, complex motor actions involved in manipulation of mind and body. When I drive home from work, the appropriate schemas are activated by previous actions. I need not plan the details; I simply decide and act.

Do I wish to detour to the fish store? I must have "fish store" actively in mind at the time I pass the critical choice point between work and home. Let it lapse from my memory at that critical junction, and I am apt to find myself at home shortly thereafter, fishless.

In different slips, different parts of the information-processing sequence go awry. For purposes of convenience, I categorize them according to which part of the human machinery is involved. As an example of a description error, consider the following:

A chartered airliner flying from Houston to Montreal crashed exactly on the border between the United States and Canada. A major political issue developed over the following question: In which country should the survivors be buried?

Most people puzzle over the choice of country. In fact, the story was made up to trap the unwary: it is the *dead* who should be buried, not the survivors. The story sets us up to be lazy mentally—to expect the critical leftovers to be the dead ones—so we don't process the word "survivors" deeply enough.

In day-to-day activities, selection errors are similarly common. For instance:

In getting ready for a party, one person carefully prepared a cake and a salad, then put the cake in the refrigerator and the salad in the oven.

Such inadvertent ambiguity can also lead to eating your friend's sandwich from a plate that looks like yours, or to putting the top of the sugar bowl on top of a coffee mug of the same size. One of my graduate students returned to his home after a track workout, pulled off his sweaty T-shirt, and tossed it into the toilet. It was not an aiming error—the laundry basket, his intended target, was in another room.

ACTIVATION AND TRIGGERING ERRORS

Once an intention is selected, executing it can easily misfire. We can, for example, forget the initial intention while some of the schemas it ordered run their course. One colleague reported that before starting work at his desk at home he headed for his bedroom, only to realize after getting there that he'd forgotten why he had gone. "I kept going," he reported, "hoping that something in the bedroom would remind me." Nothing did. He finally went back to his desk, realized that his glasses were dirty and, with a great sense of relief, returned to the bedroom for the handkerchief he needed to wipe them.

Yet another category was analyzed by William James in his classic textbook on psychology; he reported that "very absent-minded persons in going to their bedrooms to dress for dinner have been known to take off one garment after another and finally to get into bed, merely because that was the habitual issue of the first few movements when performed at a later hour."

Such errors, called capture errors, constitute one of the most fascinating categories in the field of error. They involve a simple principle: pass too near a well-formed habit and it will capture your behavior. A colleague in England who studies errors reports that someone told him this story:

"I meant to get my car out, but as I passed through the back porch on my way to the garage I stopped to put on my Wellington boots and gardening jacket, as if to work in the garden."

Our errors are easy to detect, of course, when they have such obvious consequences. Sometimes the consequence materializes several minutes after the event: for example, when you plug in the coffeepot in the morning and forget the coffee, you learn of your slip only when you start to pour.

The likelihood of human error increases when there is stress. Consider a situation in which innocent errors can have serious consequences—as, say, in nuclear-power plants. The total length of all the control panels in these complex systems may be more than 100 feet, with some 700 instruments and controls that require testing or servicing from time to time.

The difficulty of controlling reactors is simply poor systems design. Indeed, modern systems of all sorts are inconsiderate of human beings. In my research laboratory, we are attempting to understand the basic properties of human information processing, with emphasis on how skilled people select and guide their actions—and make their slips. Although the basic thrust of the research is theoretical, we share an important subgoal: to give designers the guidelines for designing systems that work *with* people, not against them. We hope not only to eliminate any disastrous effects of error, but also to make human interaction with machines pleasurable, efficient and creative.

Think of what a salesperson must do in a department store. Even for a simple purchase, a huge array of numbers must be entered into the computer cash register. The numbers are supposed to make the accounting system work, but the priorities are backward. Instead of forcing people to act like machines for the benefit of machines, why not make it the other way around? Machines can be made to do the translation into whatever hidden, laborious codes they require. The cash register should ''know'' automatically in which department it is located. The salesperson would simply punch a button for ''shirt''; if the computer needs to know more, it could be programmed to ask for specifics, which the salesperson could then provide by punching other buttons.

In industrial, aircraft and nuclear accidents, my analyses indicate that the system is most often at fault, not the operator. People make errors as a fundamental byproduct of the same information-processing mechanisms that produce their great creativity and flexibility. Yet today's systems seem sometimes designed to cause the very errors they should be set up to prevent.

1300 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. why human errors occur.
   b. Freud's theory of why errors occur.
   c. information processing.
   d. the causes of tragedies.

2. The main idea of the article is that
   a. most tragedies are caused by human error.
   b. there are reasons why human errors occur.
   c. computer technology will produce fewer errors.
   d. Freud's theory of why human errors occur is still the universally accepted explanation.

Details

3. In addition to Freud, which other psychologist was mentioned?
   a. Harry Maslow
   b. William James
   c. Carl Jung
   d. Fritz Perls

4. The air controller's mistake in giving the wrong runway
   a. caused an accident.
   b. was a triggering error.
   c. was a left/right error.
   d. was a Freudian slip.

5. According to the author, most errors are caused by
   a. hidden motivations.
   b. information-processing problems.
   c. free will.
   d. fatigue.

6. A capture error results when one
   a. cannot make a decision.
   b. has hidden motivations.
   c. passes too near a well-formed habit.
   d. has verbal confusion.

Inferences

7. Going to the market instead of the post office to mail a letter
   a. means you really didn't want to mail the letter.
   b. is a selection error.
   c. is a description error.
   d. is a habitual error.

8. If systems continue to be automated as they are now, Norman feels that
   a. chimpanzees will be able to run them.
   b. there is more possibility for error.
   c. stress will be reduced.
   d. people will be replaced by machines.

9. From the article you can infer that Norman believes Freud's theories are
   a. identical to his own.
   b. easily misinterpreted.
   c. only one of many explanations.
   d. the best explanation still available.

10. From the article you can infer that
   a. designers of nuclear power plants need to consider human stress factors when designing instrument panels.
   b. industrial designers should study human information processing.
   c. machines should be designed to make things easier, not more confusing.
   d. all of the above are true.

CRITICAL THINKING QUESTIONS

1. Describe the last time you made a slip of action error.

2. Based on the information in the article, suggest some ways in which complicated control boards such as those seen in nuclear facilities or airports might be modified to reduce human error.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **awry** (111)
   a. wrong
   b. right
   c. away
   d. on

2. **unwary** (111)
   a. overly careful
   b. stupid
   c. intellectual
   d. not cautious

3. **inadvertent** (111)
   a. purposeful
   b. unintentional
   c. hostile
   d. dangerous

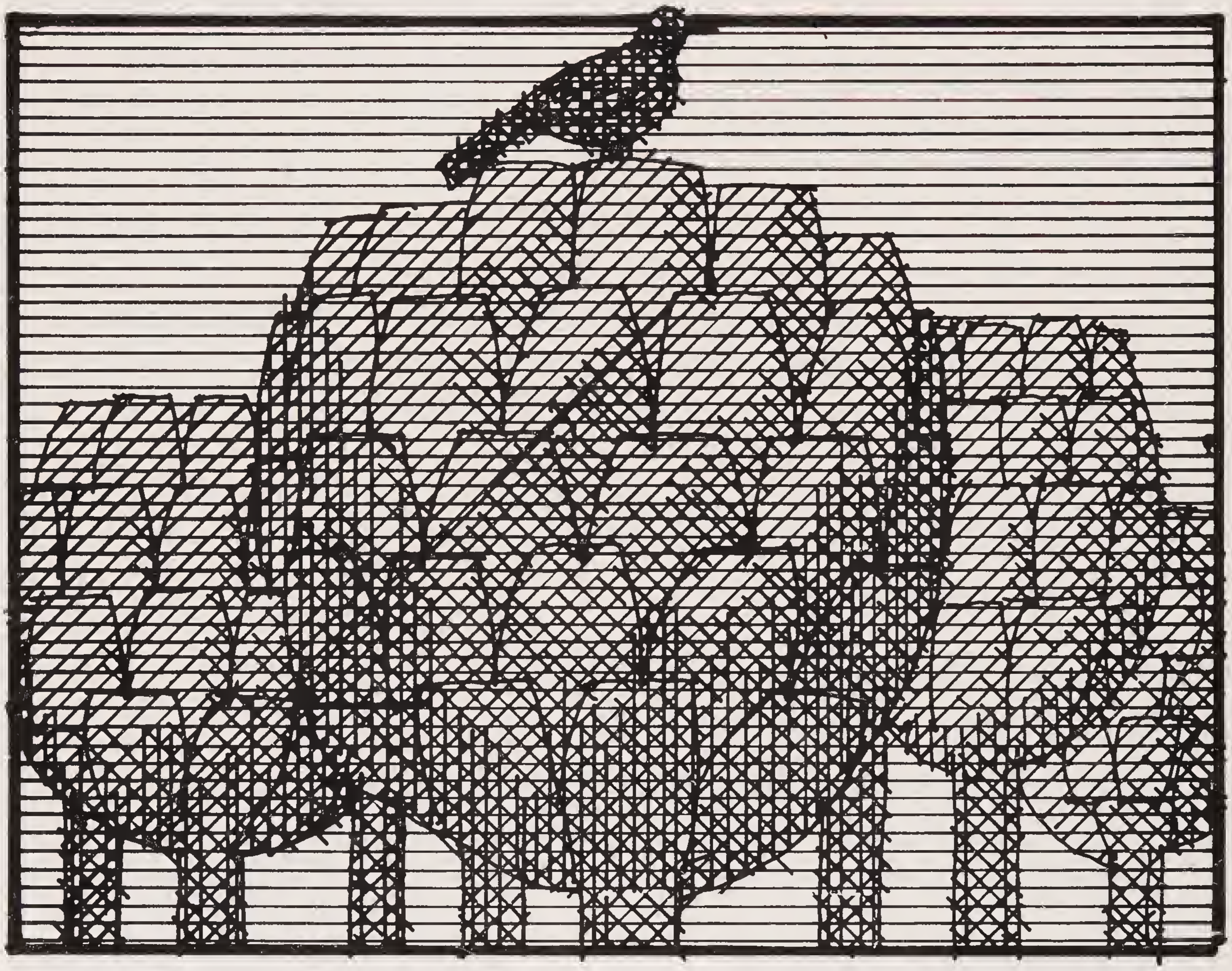
4. **ambiguity** (111)
   a. precision
   b. clearness
   c. uncertainty
   d. exactness

5. **theoretical** (112)
   a. applied
   b. unproved
   c. factual
   d. practical

Read this article. Write your starting time here: ________.

16

Journey to a Lost World



On top of Neblina, the "Mountain of the Mists," there are caterpillars resembling strands of cotton candy and fields upon fields of chest-high trees that look like open artichokes. Scorpions dine on ants inside pineapplelike plants, and frogs are so primitive that they may date from the time Africa and South America formed a single giant continent. It may not be the dinosaur-haunted, forested plateau of Sir Arthur Conan Doyle's "Lost World," but as the habitat of species previously unknown to science, this 250-square-mile Venezuelan *tepui*—a sheer-sided mesa—comes eerily close. According to a hardy band of U.S. and Venezuelan scientists who started exploring Neblina early this year, the tepui is a landlocked Galápagos—what herpetologist Roy McDiarmid of the U.S. Fish and Wildlife Service calls "an island in the clouds" where scientists can test ideas of how life evolves.

Newsweek, April 16, 1984, pp. 97–98. Copyright © 1984 by Newsweek Inc. All rights reserved. Reprinted by permission.

The horseshoe-shaped Mountain of the Mists rises 6,000 feet above Venezuela's tropical rain forest. It is one remnant of an extensive plateau that has been gullied over the last 100 million years so that only isolated tepuis remain. The area is a laboratory of evolution, where isolated flora and fauna have developed so differently from life elsewhere that scientists are still struggling to catalog the bizarre frogs, bats and snakes found near their rain-forest base camp and the giant tarantula, pink caterpillars and other creatures discovered atop Neblina. Although the explorers have barely had time to unpack their samples, they believe that fully 98 percent of the plant species on the tepui exist nowhere else on earth. And they have found enough new forms of life to convince them that "this really is a 'Lost World' phenomenon," says entomologist Jerome Rozen of the American Museum of Natural History.

Neblina supports a hodgepodge of life—sphagnum mosses and pitcher plants typical of northern bogs, reindeer lichen more at home in the Arctic, as well as palm trees and bromeliads whose five-foot-long leaves often proved too thick for machetes. "A lot of plants are real oddballs," says William Buck of the New York Botanical Gardens. "The trees have very brittle stems, and leaves just at the tops of the branches."

Katydid: Some creatures, such as the pointy-nosed frog, a three-inch moth larva with bright pink hairs and the giant tarantula may be new species. It's too soon to tell if such creatures have evolved any peculiar adaptations to the tepui habitat, but scientists did see an insect like a wingless katydid. Perhaps, in the wind-swept heights, evolution favors creatures that stay close to the ground.

As for the few birds sighted on the tepui, nature seems to have given them a little extra ballast. Familiar species such as tanagers and wrens are 20 percent larger than normal types, reports Fish and Wildlife ornithologist Mercedes Foster, probably because bigger animals retain heat better than smaller ones, helping them to survive the chilly tepui nights. The feathered flocks came in handy for the scientists' survival as well. When researchers were stranded atop Neblina for 10 days because of bad weather and a helicopter breakdown, "we ate my specimens," says Foster. "I cleaned the birds, then into the pot they'd go."

The international expedition, which will continue at least through the end of this year, hopes to gather enough specimens to reconstruct, through biology, the geology of the Mountain of the Mists. The trees with the weak, brittle wood, for instance, were apparently shaped by geologic events, says Vicky Funk of the Smithsonian. It is known from other studies that ancient flowering plants with woody stems, such as magnolia trees, sometimes evolved herbaceous stems, usually when the environment was in chaos. Later, many reverted back to woody stems when the land stabilized, but it was a very brittle wood. Neblina's brittle trees thus suggest that the South American plateau was formed by violent uplifting and then stabilized as the tepuis formed.

More dramatic geologic history is reflected in plants discovered on some of the other tepuis, whose rocks have been dated at 600 million years old. Certain mosses resemble African species, says Don Davis of the Smithsonian, and may harken back to an epoch when Africa and South America were joined before continental drift drove them apart. Some frogs also appear very old in evolutionary terms and may also date to the time of the supercontinent.

If Neblina is indeed a landlocked Galápagos island, it might hold the key to two persistent questions of evolution: how do species form and at what speed?Although Neblina is the most extensively explored tepui, scientists suspect that each harbors its own forms of life—descendants of the creatures from the original plateau that evolved independently on each tepui. The biologists want to see whether the species of each kind of animal on a tepui are genetically similar. If the birds on one tepui, for example, turn out to be genetically close, it would indicate that they have not diverged widely from the common ancestor that lived before the tepuis formed. And if the birds on a second tepui are genetically diverse, it would suggest that they formed new species much more rapidly. Such evidence would show that biological change is not a standard response to a standard environment like a tepui but is, instead, a much more haphazard and creative affair. Such a revelation would make the hazards and hardships of exploring the Mountain of the Mists a small price to pay for figuring out what lies behind the dazzling diversity of life on earth.

900 words

Write your ending time here: ________________________________

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Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. discovering new worlds.
   b. recent scientific expeditions.
   c. unusual life forms in South America.
   d. new plant and animal forms discovered in Venezuela.

2. The main idea is that
   a. new life forms are always evolving.
   b. scientists are finding life forms they thought were extinct.
   c. previously unidentified plants and animals have been found in Venezuela.
   d. isolated areas produce new life forms.

Details

3. Which type of life was not discovered on the tepui?
   a. insects
   b. plants
   c. reptiles
   d. mammals

4. Most of the trees on the tepui are
   a. unusually large.
   b. very old.
   c. unusually small.
   d. common varieties.

5. The theory of the supercontinent is supported by the
   a. study of the shifting plates theory.
   b. identification of plants and animals similar to those found in Africa.
   c. study of various forms of early man.
   d. theory of haphazard evolution on the tepui.

6. The scientists found
   a. several dangerous forms of insects.
   b. new species of known animals.
   c. dinosaur fossils.
   d. all of the above.

Inferences

7. From what has already been discovered by the scientists, we can infer that
    a. mammals cannot live in the mountainous region.
    b. mammals once lived in the region but died out.
    c. the scientists will find mammals either on this or other tepuis.
    d. mammals have probably not yet evolved on the tepui.

8. From the article we can infer that
    a. evolutionary theory might have to be modified based on the results of this expedition.
    b. birds migrate from tepui to tepui.
    c. the tepui will eventually erode to ground level.
    d. the plants are more fire retardant than ones found elsewhere.

9. From the article we can infer that
    a. the scientists will find large reptiles in the area.
    b. there are also tall lush jungles on the tepui.
    c. the climate is not conducive to small mammals.
    d. the area has not been visited by humans prior to this time.

10. From the article we can infer that the scientists probably
    a. climbed to the mesa.
    b. were flown in by helicopter.
    c. will be joined later by other groups.
    d. will soon prove that South America was once also joined to Antarctica.

CRITICAL THINKING QUESTIONS

1. What bearing might the study of animal and plant life on the Venezuela tepuis have on the theory of evolution?

2. What advantages are there in having scientists from an international group rather than from one country?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **herpetologist** (116)
   a. scientist who develops hybrid species
   b. scientist who studies reptiles
   c. scientist who studies plants
   d. scientist who studies geology

2. **flora** (117)
   a. animal life
   b. plant life
   c. crop production
   d. organic matter

3. **fauna** (117)
   a. animal life
   b. plant life
   c. crop production
   d. organic matter

4. **entomologist** (117)
   a. scientist who identifies new life forms
   b. scientist who studies animals
   c. scientist who studies insects
   d. scientist who studies evolution

5. **herbaceous** (117)
   a. poisonous
   b. tender
   c. wild
   d. hard and woody

Read this article. Write your starting time here: __________.

17

Saving Books with Science

Glenn Garelik

THE MARBLE ROTUNDA of the Library of Congress imparts an air of permanence appropriate to the timeless value of its 80 million books, documents, and manuscripts—the largest collection of printed matter in the world. But in recent years the library has become a mausoleum for many of its treasures: their pages are rapidly decomposing, turned to dust by the very chemicals used to make them.

Crumbling books have been an "excruciating problem" for decades, says Peter Sparks, the library's chief preservationist. Nearly 7,000 new books and documents arrive at the library every day, and their paper can turn to dust in as little as 25 years. But in a small laboratory not far from the rotunda, library chemists may have hit upon an effective method for arresting the decay, inexpensively and permanently, with an unlikely pair of tools: a chamber that tests spacecraft, and a chemical that ignites on exposure to air.

Before the mid-19th century, paper was made from cotton or linen rags, and it could last for hundreds of years. By then, however, the Industrial Revolution and the growing demand for reading matter called for a cheaper and more plentiful source of paper. Wood pulp fit the bill. But untreated pulp-based paper is too absorbent to take a sharp imprint, so chemicals must be added to prevent the ink from running. These additives, especially alum (aluminum sulphate), sooner or later combine with moisture in the paper to form sulphuric acid. The acid helps break down cellulose fibers, and the page begins crumbling.

This poses no threat to the library's Gutenberg Bible, which is printed on durable vellum (thin calfskin treated to take ink)—or to its Chinese scrolls, its Copernicus, its Blake, or its Newton, none of which was printed on stock derived from pulp. But the priceless edi-

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Discover, March 1983, pp. 66–67.

tions of Whitman, the first sketches of a telephone by Alexander Graham Bell, the letters of Freud—indeed, almost everything written in the past century, as three-quarters of the library's 20 million books were—are in danger.

To ward off this decomposition, the library staff of 30 conservators and technicians has for years immersed, sprayed, or brushed rare books with an alkaline solution to neutralize the acids. But to take the books apart and mend them page by page, then to treat and rebind them, is time-consuming, and it costs hundreds, sometimes thousands, of dollars a volume. Microfilming, used for more ordinary books, at $30 a volume, is also too expensive, and slow. Says Sparks, "I can't microfilm them fast enough. We can manage about 23,000 books a year—and there are millions of them out there."

In 1974, library chemists George Kelly Jr. and John Williams began exploring ways to salvage books on a larger scale. Nothing used by other libraries even came close to what they needed; the chemicals were toxic or foul-smelling, or they dissolved the ink. By a process of elimination the chemists settled upon diethyl zinc gas, or DEZ, a substance used in making plastics. Infusing the books with DEZ would effectively neutralize the acid in paper, they thought, because the chemical would bind to molecules throughout the hollow cellulose fibrils, not just coat the surface. And, unlike liquids, DEZ would neither warp the pages nor dissolve the print.

But DEZ bursts into flames if exposed to air, and it explodes on contact with water. To use the chemical safely, Kelly and Williams had to apply it in a vacuum chamber, where it would encounter neither oxygen nor moisture. They tried it on seven books in a laboratory container that Kelly says "looked just like a pressure cooker," and found that it worked. Still, the Library of Congress clearly could not protect its millions of books by treating them seven at a time.

It was then that NASA came to the rescue. Scientists at the space agency's nearby Goddard Space Flight Center, in Greenbelt, Maryland, offered to adapt one of their large vacuum chambers—originally designed to simulate the intense solar radiation encountered in space. They estimated that it could handle 5,000 volumes at a time.

In October, thousands of books were shipped to Greenbelt. They were placed in the chamber, spines down, in ordinary milk crates, loosely packed and separated by chicken wire to give them maximum exposure to the gas.

To draw the natural moisture out of the books, the scientists removed the air from the chamber and heated it to 113 degrees Fahrenheit. Then they piped in the DEZ vapor. Six days later, when the books were impregnated with DEZ, they added water vapor and carbon dioxide. The water vapor brought the moisture in the pages into equilibrium with the moisture content of the air; the carbon dioxide combined with the zinc in the paper to form zinc carbonate—a harmless alkali that should keep the paper from turning acid again. In early November, when the test books were finally removed from the chamber, the scientists dabbed them with chlorophenyl red, a chemical that turns violet if no acid is present. They were rewarded with a violet hue. Kelly is predicting that the process should extend the lives of the books for as long as 500 years—and it can be repeated again and again.

The library hopes to build a plant of its own by 1985—one that will be able to treat 15,000 to 20,000 books every two weeks for less than $5 a book. Because the treatment cannot restore paper that is already crumbling, books in good condition will get priority. Those too brittle to be saved will be put on microfilm, or their texts stored in a computer memory. Still, says Sparks, with 532 miles of stacks to check, the "monster backlog" will require years of gassing with DEZ to clear up.

Not long after the invention of the printing press, the German scholar Johannes Trithemius argued for tradition: "If writing is inscribed on parchment it will endure a thousand years. But how long will it last on paper?" Five centuries later, the answer seems to be: as long as chemists want it to.

1000 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. the problem of decomposition of books.
   b. consequences of the Industrial Revolution.
   c. a new way of preserving books.
   d. the Library of Congress.

2. The main idea is that
   a. there have been major advances in library science recently.
   b. the Library of Congress has the world's largest collection.
   c. we should return to using good-quality paper.
   d. there is a new way to preserve books.

Details

3. Crumbling pages only affect books printed
   a. on rag paper.
   b. in the Western hemisphere.
   c. in the last century.
   d. in ancient times.

4. The DEZ treatment can extend the life of a book by
   a. 5 years.
   b. 50 years.
   c. 200 years.
   d. 500 years.

5. DEZ vapor
   a. cannot be used in the presence of air.
   b. cannot be used in the presence of water.
   c. neutralizes acid.
   d. all of the above.

6. The reason for preserving books with DEZ instead of microfilming them is that
   a. microfilm takes up too much storage space.
   b. microfilm decomposes.
   c. DEZ-treated books last longer than microfilmed books.
   d. using DEZ is cheaper than microfilming.

Inferences

7. You can infer from the article that
   a. things were better in the old days.
   b. it's probably unhealthy to spend a lot of time around chemically treated books.
   c. books will probably be outmoded soon.
   d. some problems caused by technology are also solved by technology.

8. You can infer that
   a. library science is not up to date.
   b. space exploration has practical side effects.
   c. we are living in an age as exciting as the Industrial Revolution.
   d. computer memory is the storage medium of the future.

9. You can infer from the article that
   a. there has been a tremendous explosion of information in this century.
   b. the Library of Congress staff is overworked and underpaid.
   c. DEZ gas can heal damaged books.
   d. all of the above are true.

10. You can infer that the Library of Congress probably
    a. has a bigger budget that most other libraries.
    b. is in the forefront of library science.
    c. stores many historic documents.
    d. does all of the above.

CRITICAL THINKING QUESTIONS

1. Thousands of new books are being published each year. Is it necessary, at such a tremendous cost, to preserve thousands of old books that nobody will probably look at or read?

2. Describe the process NASA used in preserving the books that were shipped to the Goddard Space Flight Center.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

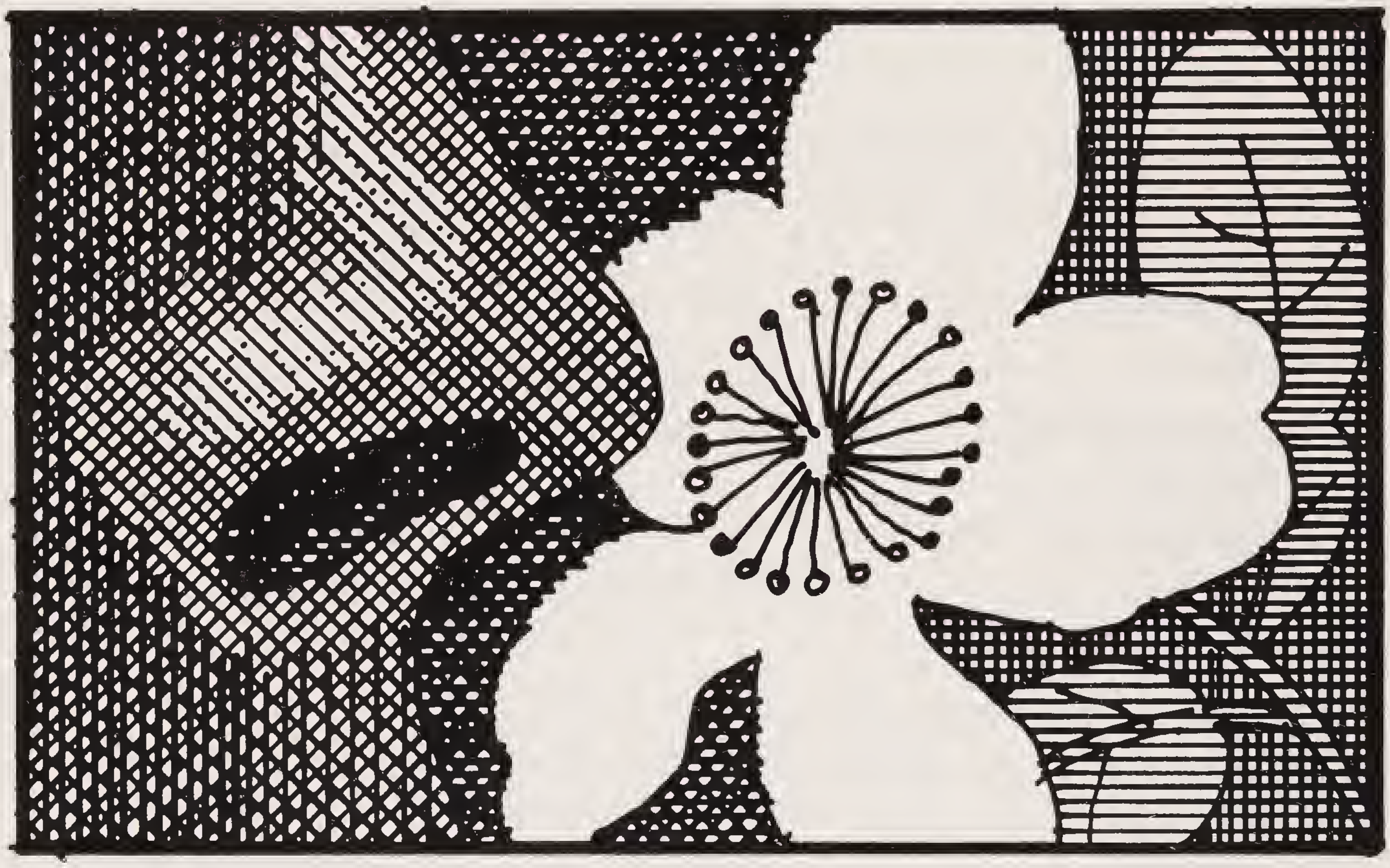
1. **excruciating** (122)
   a. mild
   b. brief
   c. painful
   d. painless
2. **cellulose** (122)
   a. linen
   b. plastic
   c. animal
   d. plant
3. **immersed** (123)
   a. dipped
   b. painted
   c. rubbed
   d. coated
4. **simulate** (123)
   a. provide
   b. imitate
   c. prevent
   d. shut out
5. **impregnated** (123)
   a. brushed
   b. sprayed
   c. coated
   d. saturated

Read this article. Write your starting time here: __________.

18

What the Nose Knows

Jane E. Brody



HOW CAN A WORKER in a rendering plant enjoy his lunch amidst the noxious odors?

Why do people lose the smell of gas soon after entering a room with a small gas leak, even though the leak persists?

How can something smelled today evoke memories from years past?

Do women really have a keener sense of smell than men do?

Why does the common cold interfere with the taste of food?

New studies of the sense of smell are shedding light on these and many other longstanding questions about human odor perception. Although smell is a far more acute sense than taste, it has so far received much less research attention.

In fact, until recently many who studied odor focused on classification: from Plato, who categorized smells as either "pleasant" or "unpleasant"; to Linnaeus, who 2100 years later proposed seven odoriferous qualities: aromatic, fragrant, musky, garlicky, goaty, repulsive and nauseous; to a Dutch physiologist of the 20th century who added

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The New York Times, February 22, 1983. Copyright © 1983 by The New York Times Company. Reprinted by permission.

"ethereal" (fruity), "empyreumatic" (burnt organic matter) and a host of subdivisions to Linnaeus's classifications.

Researchers today have abandoned efforts to catalog odors and instead are studying how people detect and interpret them, what can be done to get rid of noxious odors and what causes the sense of smell to fail. They have found, among other things, that the human sense of smell is much better attuned than previously thought.

Although the average person, when blindfolded, can correctly name only a handful of common odors, studies at Yale University showed that this limitation results from an inability to think of the names of odors rather than a failure to detect differences between odors. After a preliminary test in which people were given the right names for odors, they named correctly all or nearly all of 80 different odors, suggesting that with proper labeling the list could be extended to hundreds.

"In other words," according to Dr. William S. Cain, who directs the Yale research, "the human nose knows more than we realized." His studies have shown that, contrary to common belief, women are not better able to detect odors than men, but "they are more aware of the odor environment and can identify many more odors than men can."

Based on their finding that human odor perception is keen but "poorly linked to language," Cain and his colleagues have devised a new test to help doctors detect abnormalities of the sense of smell. Instead of having patients think of the names for odors, the test gives them a multiple-choice list from which to select the names of odors they can smell.

Abnormalities in the sense of smell can aid in the diagnosis of a number of disorders, including brain tumors, head injuries, occupational exposure to toxic vapors or dust, epilepsy, obstructions in the nose and various infections.

At a newly established taste and smell clinic at the University of Connecticut at Farmington, researchers are finding that the overwhelming majority of patients complaining of a loss of taste really have something wrong with their ability to smell. The clinic is one of two "chemosensory" research and treatment centers (the other is at the University of Pennsylvania) recently established under grants from the National Institute of Neurological and Communicative Disorders and Stroke, in part to help the more than two million American adults who cannot smell and taste normally.

According to Dr. Linda Bartoshuk, a Yale taste expert and a principal investigator at the Farmington clinic, "We've found that people who've never been able to smell don't seem to realize what they're missing, but those who lose the sense of smell later on are devastated." People who cannot smell can taste only sweet, sour, salty and bitter, but not any of the subtle flavors like those of chocolate, roast beef, lemon or herbs. However, contrary to common medical belief, the researchers have found no evidence of malnutrition among people without a sense of taste.

The cause of a loss of taste is often simple and correctible: a polyp or scar tissue in the nose or swelling due to an allergy, Bartoshuk said. Yet, she added, patients complaining of lost or distorted chemosensory perceptions are often shunted from one doctor to another and not taken seriously or offered much hope for diagnosis or cure.

As Cain explained it, the anatomy of the sense of smell is simple at its beginning but becomes highly complex once the olfactory messages enter the central nervous system and spread out in a diffuse maze to a number of different brain centers.

For a person to smell something, air containing odoriferous molecules must reach a tiny cluster of specialized nerve cells (neurons) at the top of the nose just above the bridge. There are about five million of these receptor cells in each of the two nasal cavities. Air inhaled through the nose first passes across a series of bones, the turbinates, before a small amount makes its way to the odor receptors. "When you sniff, you create eddy currents that force air into the upper portion of the nose and greatly increase odor perception," Cain said.

Food flavors, which are primarily smells rather than tastes, are perceived differently. When food is put in your mouth, odors travel up the back of the nose until they reach the olfactory receptors. "If you want to savor something in your mouth, you actually exhale, which forces air from the mouth across the olfactory receptors," Cain said.

Lower mammals, such as dogs and cats, have a more acute sense of smell than humans because their noses have more receptors and the receptors are located in the main airstream.

Olfactory neurons are the only nerve cells in the body that regenerate, replacing themselves once every month or two. Thus, people whose olfactory neurons are accidentally damaged, say, by a blow to the head, may eventually regain their sense of smell when new neurons grow and reestablish links with the proper regions of the brain.

Once triggered by an odor, the olfactory neurons send messages through nerve fibers to the olfactory bulbs, two lobes at the base of the brain at about eye level. But olfactory messages don't stop there; they also travel to brain regions involved in cognition, emotion and other activities.

These many connections may explain the ability of odors to evoke strong memories of long-ago events, Cain said. He added, "The smell of creosote [a wood preservative] may prompt you to recall your grandmother's beach house, which you haven't smelled in 50 years. Odor memory is very long-lasting. Our studies show that unlike other senses, there's really no significant decay of odor memory."

There are also no inborn preferences for odors; rather, these are gleaned from experience, which accounts for the fact that one group of people may like an odor that another group finds repulsive. Certain African tribes, for example, "perfume" their hair with rancid fat, an odor that most Caucasians find unpleasant.

Studies of children have shown that as they get older, their "hedonic reactions," their pleasure or displeasure when exposed to odors, widen and deepen from mild preferences to intense liking or disgust. "Very young children seem indifferent to odors, which is why an infant can play with his feces, an odor that adults find disgusting," Cain noted. At the other end of the age spectrum, sensitivity to odors declines in the elderly, as a result of both lost perceptual ability and impaired brain function.

People also get used to odors, even those that are initially extremely unpleasant. In a study involving repeated exposure to the odor of sweaty socks, people soon began to downgrade its unpleasantness. Similar repeated exposure to the initially pleasing smell of lemon led to a decline in pleasantness.

"There is a drift in reactions to odors toward hedonic neutrality," Cain said. In his book *Working*, Studs Terkel quotes a worker in a rendering plant: "The odor was terrible, but I got used to it. It was less annoying when you stayed right in it. When you left for a week or two, a vacation, you had to come back and get used to the thing all over again." Conversely, the worker in a candy factory may claim that the smell of chocolate has lost its appeal.

Cain's studies, which are conducted at the Yale-affiliated John B. Pierce Foundation Laboratory in New Haven, Conn., show that adaptation to odors occurs both in the olfactory neurons and in the brain. The brain also learns to sort out individual odors, one of which may be initially masked by the intensity of another. Thus, the rendering plant worker is able to taste his lunch whereas a visitor to the plant would be overwhelmed, unable to "taste" anything but the plant odor. Smelly chemicals used to mask odors, such as those sprayed to hide the tobacco odor in smoking cars, eventually can be detected separately from the odor they are supposed to mask.

Cain's current studies examine odor tolerance and control from an energy-saving perspective. Groups of volunteers sit in a tightly controlled environmental chamber giving off various human odors while large volumes of air enter the chamber through a sieve-like floor with 14,000 holes. The smell of the air vented out of the room is then evaluated by human "sniffers" (no mechanical equivalent of the human smell perception has yet been invented).

In a study with Dr. Brian P. Leaderer, Cain found that "normal" levels of cigaret smoking in the chamber increased the need for ventilation by fivefold to achieve desired odor control. The pollution level in a normally ventilated room where people were smoking exceeded acceptable outdoor pollution levels, as measured by total suspended particulates.

"There's a lot of interest now in ventilation systems that operate in response to the need at the moment," Cain said. "We want to know, for example, how long the ventilation system has to run to get rid of contaminants after people leave a room. We find that the odor of cigaret smoke lingers and lingers, and may actually get worse in a closed-up room after the occupants have left."

1700 words

Write your ending time here: ______________________

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Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. the causes of odors.
   b. the process of perceiving odors.
   c. diseases of the nasal cavity.
   d. the problems caused by the excessive odors found in today's world.

2. The main idea is that
   a. many more people are now suffering from nasal disorders than in the last century.
   b. new research is finding that nasal disorders can be corrected with surgery.
   c. new facts are being uncovered about the sense of smell.
   d. nasal disorders are more serious than once thought.

Details

3. Through repeated exposure,
   a. unpleasant odors become less unpleasant.
   b. the brain learns to distinguish individual odors.
   c. pleasant odors can become less pleasant.
   d. all of the above.

4. Researchers have found that the human sense of smell
   a. has decreased in the last decade.
   b. has improved in the last century.
   c. is better attuned than previously thought.
   d. is being destroyed by the noxious odors now in the air.

5. To increase the sense of taste for a food, you should
   a. blow on it while it is hot.
   b. inhale while it is in your mouth.
   c. exhale while it is in your mouth.
   d. try not to breathe while tasting it.

6. Researchers at the University of Connecticut have found that
   a. the sense of smell rarely interacts with other senses.
   b. most patients with olfactory problems cannot be cured.
   c. loss of the sense of taste is often really the loss of the sense of smell.
   d. stroke victims often lose the sense of smell.

Inferences

7. From the article we can infer that in the past, people who lost the sense of smell
   a. were unable to find specialists to deal with their problem.
   b. were very frustrated when trying to find a cure.
   c. often suffered needlessly.
   d. experienced all of the above.

8. From the article we can infer that reactions to certain smells
   a. are inborn.
   b. are influenced by culture.
   c. are purely a matter of individual taste.
   d. can be used by scientists to make people hallucinate.

9. Wine tasters, who must taste minor differences in wine, probably
   a. have more olfactory receptors than the average person.
   b. have more receptors in the main airstream of the nasal passage than the average person.
   c. exhale while tasting wine.
   d. don't suffer many colds.

10. The author implies that people working in a restaurant become
    a. more sensitive to food odors.
    b. less sensitive to food odors.
    c. nauseated by food odors.
    d. fat.

CRITICAL THINKING QUESTIONS

1. Based on the article, what do you think the effects of air pollution will have on the sense of smell?

2. What positive effects can you imagine may result from the study of the sense of smell?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **noxious** (128)
   a. pleasant
   b. strong
   c. bad
   d. constant
2. **evoke** (128)
   a. send away
   b. call forth
   c. realize
   d. detect
3. **odoriferous** (128)
   a. inhaling odors
   b. giving off odors
   c. disguising odors
   d. eliminating odors
4. **chemosensory** (129)
   a. sensory perception of chemicals
   b. sensory disorders
   c. chemical imbalance
   d. heightening the senses through chemical ingestion
5. **olfactory** (130)
   a. nasal
   b. numerous
   c. complex
   d. oral

Read this article. Write your starting time here: ________.

19

When Aristotle Fails, Try Science Fiction

Isaac Asimov

IT IS ODD TO BE ASKED whether science fiction is a literature of ideas. Far from doubting that it is, I would like to suggest that it is the *only* literature of relevant ideas, since it is the only literature that, at its best, is firmly based on scientific thought.

Of the products of the human intellect, the scientific method is unique. This is not because it ought to be considered the only path to Truth; it isn't. In fact, it firmly admits it isn't. It doesn't even pretend to define what Truth (with a capital T) is, or whether the word has meaning. In this it parts company with the self-assured thinkers of various religious, philosophical, and mystical persuasions who have drowned the world in sorrow and blood through the conviction that they and they alone own Truth.

The uniqueness of science comes in this: the scientific method offers a way of determining the False. Science is the only gateway to proven error. There have been Homeric disputes in the history of science, and while it could not be maintained that either party was wholly right or had the key to Truth, it could be shown that the views of at least one were at variance with what seemed to be the facts available to us through observation.

Pasteur maintained alcoholic fermentation to be the product of living cells; Liebig said no. Liebig, in the mid-nineteenth-century context of observation, was proved wrong; his views were abandoned. Newton advanced a brilliantly successful picture of the universe, but it failed in certain apparently minor respects. Einstein advanced another picture that did not fail in those respects. Whether Einstein's view is True is still argued and may be argued for an indefinite time to come, but Newton's view is False. There is no argument about the latter.

"A Literature of Ideas" (orig. "When Aristotle Fails, Try Science Fiction"), copyright © 1971 by Communications/Research/Machines, Inc. From *Today and Tomorrow and . . .* by Isaac Asimov. Reprinted by permission of Doubleday and Company, Inc.

Compare this with other fields in which intellectuals amuse themselves. Who has ever proved a school of philosophy to be False? When has one religion triumphed over another by debate, experiment and observation? What rules of criticism can settle matters in such a way that all critics will agree on a particular work of art or literature?

A man without chemical training can speak learnedly of chemistry, making use of a large vocabulary and a stately oratorical style—and he will be caught out almost at once by any bright teenager who has studied chemistry in high school.

That same man, without training in art, can speak learnedly of art in the same way, and while his ignorance may be evident to some real expert in the field, no one else would venture to dispute him with any real hope of success.

There is an accepted consensus in science, and to be a plausible fake in science (before any audience not utterly ignorant in the field) one must learn that consensus thoroughly. Having learned it, however, one has no need to be a plausible fake.

In other fields of intellectual endeavor there is, however, no accepted consensus. The different schools argue endlessly, moving in circles about each other as fad succeeds fashion over the centuries. Though individuals may be unbelievably eloquent and sincere, there is, short of the rack and the stake, no decision ever. Consequently, to be a plausible fake in religion, art, politics, mysticism, or even any of the "soft" sciences such as sociology (to anyone not utterly expert in the field), one need only learn the vocabulary and develop a certain self-assurance.

It is not surprising, then, that so many young intellectuals avoid the study of science and so many old intellectuals are proud of their ignorance of science. Science has a bad habit of puncturing pretension for all to see. Those who value their pretension to intellect and are insecure over it are well advised to avoid science.

To be sure, when a scientist ventures outside his field and pontificates elsewhere, he is as likely to speak nonsense as anyone else. (And there may be those unkind enough to say I am demonstrating this fact in this very article.) However, since nonsense outside science is difficult or impossible to demonstrate, the scientist is at least no worse than anyone else in this respect.

If we consider Literature (with a capital L) as a vehicle of ideas, we can only conclude that, by and large, the ideas with which it is concerned are the same ideas that Homer and Aeschylus struggled with. They are well worth discussing, I am sure; even fun. There is enough there to keep an infinite number of minds busy for an infinite amount of time, but they weren't settled and aren't settled.

It is these "eternal verities" that are precisely what science fiction doesn't deal with. Science fiction deals with change. It deals with the possible advance in science and with the potential changes—even in those damned eternal verities—this may bring about in society.

As it happens, we are living in a society in which all the enormous changes—the *only* enormous changes—are being brought about by science and its application to everyday life. Count up the changes introduced by the automobile, by the television set, by the jet plane. Ask yourself what might happen to the world of tomorrow if there is complete automation, if robots become practical, if the disease of old age is cured, if hydrogen fusion is made a workable source of energy.

The fact is that no previous generation has had to face the possibility and the potentialities of such enormous and such rapid change. No generation has had to face the appalling certainty that if the advance of science isn't judged accurately, if the problems of tomorrow aren't solved before they are upon us, that advance and those problems will overwhelm us.

This generation, then, is the first that can't take as its primary concern the age-old questions that have agitated all deep thinkers since civilization began. Those questions are still interesting, but they are no longer of first importance, and any literature that deals with them (that is, any literature but science fiction) is increasingly irrelevant.

If this thought seems too large to swallow, consider a rather simple analogy: the faster an automobile is moving, the less the driver can concern himself with the eternal beauties of the scenery and the more he must involve himself with the trivial obstacles in the road ahead.

And that is where science fiction comes in.

Not all science fiction, of course. Theodore Sturgeon, one of the outstanding practitioners in the field, once said to a group of fans, "Nine-tenths of science fiction is crud." There was a startled gasp from the audience and he went on, "But why not? Nine-tenths of everything is crud." Including mainstream literature, of course.

It must be understood, then, that I am talking of the one-tenth (or possibly less) of science fiction that is not crud.

This means you will have to take my word for what follows, if you are not yourself an experienced science-fiction fan. The nonfan or even the mild fan with occasional experience in the field is almost certain to have been exposed only to the crud, which is, alas, of high visibility. He sees the comic strips, the monster movies, the pale TV fantasies. He never sees the better magazines and paperbacks where the science-fiction writers of greatest repute are to be found.

So let's see—

In 1940 there was endless talk about Fascism, Communism, and Democracy, talk that must have varied little in actual content concerning the conflicts of freedom and authority, of race, religion, and patriotism, from analogous discussions carried on in fifth and fourth centuries B.C. Greece. In 1940, when the Nazis were everywhere victorious, such talk might well have been considered important. It might plausibly have been argued that these discussions dealt with the great issues of the century.

And what was science fiction talking about? Well, in the May 1941 issue of *Astounding Science Fiction*, there appeared a story called "Solution Unsatisfactory" by Anson MacDonald (real name, Robert A. Heinlein), which suggested that the United States might put together a huge scientific project designed to work out a nuclear weapon that would end World War II. It then went on, carefully and thoughtfully, to consider the nuclear stalemate into which the world would consequently be thrown. At about the same time, John W. Campbell, Jr., editor of the magazine, was saying, in print, that the apparent issues of the war were, in a sense, trivial, since nuclear energy was on the point of being tamed and that this would so change the world that what then seemed life-and-death differences in philosophy would prove unimportant.

Well, who were the thinkers who, in 1940, were considering the nuclear stalemate? What generals were planning for a world in which each major power had nuclear bombs? What political scientists were thinking of a situation in which no matter how hot the rhetoric between competing great powers, any war between them would have to stay cold—not through consideration of fine points of economics or morals, but over the brutal fact that a nuclear stalemate cannot be broken, short of world suicide?

These thoughts, which were, after all, the truly relevant ideas on 1940's horizon, were reserved to science-fiction writers.

Nowadays, articles on ecology are in great demand, and it is quite fashionable to talk of population and pollution and of all the vast changes they may bring about. It is easy to do so now. Rachel Carson started it, most people would say, with her *Silent Spring*. But did anyone precede her?

Well, in the June, July, and August 1952 issues of *Galaxy*, there appeared a three-part serial, "Gravy Planet," by Frederik Pohl and Cyril Kornbluth, which is a detailed picture of an enormously overpopulated world from almost every possible aspect. In the February 1956 issue of *Fantasy and Science Fiction*, there appeared "Census Takers" by Frederik Pohl in which it is (ironically) suggested that the time will come when one of the chief duties of census takers will be to shoot down every tenth (or fourteenth, or eighth, depending on the population increase in the past decade) person they count, as the only means of keeping the population under control.

What sociologist (not now, but twenty years ago) was clamoring in print over the overwhelming effect of population increase? What government functionary (not now, but twenty years ago) was getting it clearly through his head that there existed no social problem that did not depend for its cure, *first of all*, on a cessation of population growth? (Surely not President Eisenhower, who piously stated that if there was one problem in which the government must not interfere, it was the matter of birth control. He changed his mind later; I'll give him credit for that.) What psychologist or philosopher (not now, but twenty years ago) was pointing out that if population continued to increase, there was no hope for human freedom or dignity under any circumstances?

Such thoughts were pretty largely reserved, twenty years ago, to science-fiction writers.

There are many people (invariably those who know nothing about science fiction) who think that because men have reached the moon, science has caught up with science fiction and that science fiction writers have "nothing to write about."

They would be surprised to know that the mere act of reaching the moon was outdated in science fiction in the 1920s and that no reputable science-fiction writer has been excited by such a little thing in nearly half a century.

In the July 1939 issue of *Astounding Science Fiction*, there appeared a story called "Trends," written by myself while I was still a teenager. It did indeed deal with the first flights to the moon, which I put in the period between 1973 and 1978. (I underestimated the push that would be given rocket research by World War II.) My predictions on the details of the beginnings of space exploration were ludicrously wrong, but none of that represented the point of the story, anyway.

What made the story publishable was the social background I presented for the rocket flights. In my story, I pictured strong popular opposition to the notion of space travel.

Many years later it was pointed out to me that in all the voluminous literature about space travel, either fictional or nonfictional, no such suggestion had ever before been broached. The world was always pictured as wildly and unanimously enthusiastic.

Well, where in 1939 was there the engineer or the industrialist who was taking into serious account the necessity of justifying the expense and risk of space exploration? Where was the engineer or the industrialist who was soberly considering the possibility of space exploration?

Such thoughts were largely reserved for the science-fiction writer and for a few engineers, who in almost every case were science-fiction fans—Willy Ley and Wernher von Braun, to name a couple.

And where does science fiction stand today?

It is more popular than ever and has gained a new respectability.

Dozens of courses in it are being given in dozens of colleges. Literary figures have grown interested in it as a branch of the art. And, of course, the very growth in popularity tends to dilute and weaken it.

It has grown sufficiently popular and respectable, since the days of Sputnik, for people to wish to enter it as a purely literary field. And once that becomes a motive, the writers don't need to know science anymore. To write purely literary science fiction, one returns to the "eternal verities" but surrounds them with some of the verbiage of science fiction, together with a bit of the new stylistic experimentation one comes across in the mainstream and with some of the explicit sex that is now in fashion.

And this is what some people in science fiction call the "new wave."

To me, it seems that the new wave merely attempts to reduce real science fiction to the tasteless pap of the mainstream.

New-wave science fiction can be interesting, daring, even fascinating, if it is written well enough, but if the author knows no science, the product is no more valuable for its content of relevant ideas than is the writing outside science fiction.

Fortunately, the real science fiction—those stories that deal with scientific ideas and their impact on the future as written by someone knowledgeable in science—still exists and will undoubtedly continue to exist as long as mankind does (which, alas, may not be long).

This does not mean that every science-fiction story is good prediction or is necessarily intended to be a prediction at all, or that very good science-fiction stories might not deal with futures that cannot reasonably be expected to come to pass.

That does not matter. The point is that the habit of looking sensibly toward the future, the habit of assuming change and trying to penetrate beyond the fact of change to its effect and to the new problems it will introduce, the habit of accepting change as now more important to mankind than those dreary eternal verities, is to be found only in science fiction or in those serious nonfictional discussions of the future by people who, almost always, are or have been deeply interested in science fiction.

For instance, while ordinary literature deals merry-go-round-wise with the white-black racial dilemma in the United States, I await the science-fiction story that will seriously consider the kind of society America might be attempting to rebuild *after* the infinitely costly racial war we are facing—a war that may destroy our world influence and our internal affluence. Perhaps such a story, sufficiently well thought out and written, may force those who read it into a contemplation of the problem from a new and utterly relevant angle.

To see what I mean, ask yourself how many of those, north and south, who blithely talked abolition and secession in the 1850s in terms of pure rhetoric might not have utterly changed their attitudes and gotten down to sober realities if they could have foreseen the exact nature of the Civil War and of the Reconstruction that followed and could have understood that none of the torture of the 1860s and 1870s would in the least solve the problem of white-and-black after all.

So read this magazine and others of the sort by all means, and follow the clash of stock ideas as an amusing intellectual game. Or read Plato or Sophocles and follow the same clash in more readable prose. But if you want the real ideas, the ideas that count today and may even count tomorrow, the ideas for which Aristotle offers little real help, or Senator X or Commissar Y either, then read science fiction.

2800 words

Write your ending time here: ______________________________

Subtract your starting time: ______________________________

Total time: ______________________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. the path to Truth.
   b. the scientific method.
   c. the value of science fiction.
   d. the dangers of mysticism.

2. The main idea is that science fiction
   a. has more literary merit than people think.
   b. should be written by people knowledgeable about science.
   c. is the most relevant literature today.
   d. is similar to detective stories in value.

Details

3. Asimov believes that the increase in popularity of science fiction is
   a. good.
   b. bad.
   c. neutral.
   d. exciting.

4. Asimov believes that the important issues today are
   a. the same as they always were.
   b. the changes caused by technology.
   c. based on man's inhumanity to man.
   d. economic.

5. Asimov predicts that the United States will have a
   a. golden age.
   b. religious conversion.
   c. nuclear holocaust.
   d. racial war.

6. Asimov believes that the scientific method is unique because
   a. it can disprove false arguments.
   b. scientists are more intelligent than most others.
   c. it is the path to Truth.
   d. it asks only questions that can be answered.

Inferences

7. The main reason world leaders should read science fiction is to
   a. relax from the stress of their jobs.
   b. learn about the latest scientific discoveries.
   c. become more well-rounded.
   d. better predict the consequences of their decisions.

8. Asimov seems to think that debates about the meaning of life are
    a. a waste of time.
    b. the path to Truth.
    c. fascinating.
    d. constructive.

9. Asimov suggests that science fiction may
    a. reduce pollution.
    b. solve racial conflicts.
    c. prevent wars.
    d. all of the above.

10. Asimov implies that egomaniacs
    a. avoid science.
    b. try to gain power through scientific knowledge.
    c. are more attracted to chemistry than to art.
    d. exist among scientists.

CRITICAL THINKING QUESTIONS

1. Describe the scientific method.
2. Think of three plots for science fiction stories that are relevant to problems we face today.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **Homeric** (136)
    a. epic
    b. argumentative
    c. petty
    d. everlasting

2. **oratorical** (137)
    a. musically gifted
    b. having to do with drama
    c. having to do with public speaking
    d. artistic

3. **pontificate** (137)
    a. to behave with dignity
    b. to act pompously
    c. to be snobbish
    d. to act the clown

4. **ludicrous** (140)
    a. laughable
    b. pathetic
    c. irritating
    d. fortunate

5. **voluminous** (140)
    a. creative
    b. surprising
    c. wordy
    d. large

Read this article. Write your starting time here: __________.

20

Snoring: An Unwelcome Bedfellow

Sheila Sobell Moramarco

As if fights over the number of covers on our bed (I like it hot, he likes it cold) or the relationship between the number of rotations per minute and the magnitude of the shock waves produced (we used to have a waterbed), weren't enough, three months ago my bedmate introduced a new wrinkle into the connubial bed—snoring. Now, we're not talking about the gentle rise and fall of the chest or satisfied puffs of air bubbling happily from his slightly parted lips; we're talking sonic booms. Along with the snoring appeared a delusion peculiar to the habit: my love swore on the proverbial stack of bibles that nary a sound but endearments has ever passed his lips in bed.

It was just about this time that, having written numerous articles about sleep, I began receiving in the mail a number of promotional items designed to inhibit snoring. The first was a specially created cervical collar that cut off the snore at its source by elevating the jaw, thus keeping the mouth shut.

I dug out the cervical collar I had secreted away in my drawer and figured I'd give it a try. The collar, however, quickly became a major issue of contention; whenever he could, my husband would sneak into bed, sans collar, fall happily asleep and, of course, begin to snore. So, I would wake him up, chide him for his collarlessness, and, of course, an argument would ensue. It became impossible to tell whether the snoring stopped because the process interrupted his sleep or wearing the device actually managed to shut him up.

The next item was composed of two peanut-shaped pieces of plastic with air holes and a bit of elastic that, once inserted between the lips and teeth, purportedly achieved the desired effect, a closed mouth. After turning the apparatus over several times in the palm of his hand,

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Sheila Sobell Moramarco, "Snoring: An Unwelcome Bedfellow." Reprinted courtesy *PSA* magazine carried aboard Pacific Southwest Airlines. © 1982. East/West Network, Inc. publisher.

my husband fixed me with a baleful stare, muttered something indiscernible and slammed out of the room.

We never did progress to the Flack exercises described in a charming little booklet put out by Silentsleep of New York to accompany its antisnoring invention, a polyethylene mouthpiece that keeps the jaw from drooping while allowing breathing to continue through the mouth. The Flack exercises, claim the authors, are designed to "train the muscles that keep the jaw shut." The first exercise involves holding something between the teeth (a rose, flamenco style?) for ten minutes every night before retiring.

The second works to "strengthen and shorten the muscles that hold the lower jaw and tongue forward." The effect is achieved by means of an isometriclike exercise that involves pressing against your chin with your hand while pushing forward with your jaw.

I was beginning to wish that the Ty-d Bol Man or the Pillsbury Dough Boy would consent to spend a night stationed on my mate's chest, tiny hands clamped against his chin in one last desperate attempt to stifle the snores—hardly the type of bedtime fantasy that encourages a good, loving relationship.

The problem with snoring is that no one really knows what causes it or how to stop it. According to one expert, psychologist Sonia Ancoli-Israel, assistant director of the Sleep Disorders Clinic at the Veterans Administration Medical Center in San Diego, "Snoring is caused by a partial obstruction of the airway. That explains why we snore when we have a cold—our nose is clogged. In some people, the blockage can be located in the nose/throat area as a result of swollen tonsils, enlarged adenoids, sinusitis or allergic rhinitis. In others, it could be a nightly occurrence with something in the airway consistently closing down."

More often than not, snoring is the result of poor sleep hygiene. That usually means falling asleep on one's back, possibly having enjoyed too much alcohol or too many rich foods shortly before retiring. Sometimes the trigger might be poorly fitted dentures or heavy smoking.

In some cases, however, the cause is not benign. It may signal the presence of a potentially serious disorder called sleep apnea syndrome, a condition that causes a breathing stoppage at least five times an hour for ten seconds or longer. In such instances, the snore is actually a gasp for breath.

Though researchers have always considered sleep apnea a male disorder, recent studies have disclosed some startling information. Not only is sleep apnea age-related, affecting one-third of those past sixty-five, but following menopause, almost as many women as men are afflicted. Most disconcerting of all, there appears to be no relationship between a lack of sleep-related complaints and the absence of undetected sleep apnea. In other words, those who brag that they "sleep like a baby" are just as apt to have the hidden ailment as those crotchety insomniacs.

This is not to suggest, however, that all snorers are potential sleep apnea victims. Generally, the possibility exists only if the sleeper complains of excessive daytime sleepiness, or someone notices that he or she actually stops breathing during the night. Treatment becomes a consideration only if the condition appears to be causing (among other symptoms) cardiac arrhythmia or nocturnal hypertension. While it's possible that a persistent lack of oxygen might at some point cause brain damage (some patients, in fact, do complain of mental confusion), the possibility remains only speculation.

Since little is actually understood about snoring itself or its relationship to sleep apnea, some additional precautions may be helpful. Because one stiff drink (two ounces of alcohol) at bedtime prolongs and increases the number of apnea incidents, why not skip the nightcap if you're a snorer? And since hypertension is more prevalent among snorers, it might also be wise to keep an eye on your blood pressure.

Whatever the origin of the snore, nowhere is the old saw "Necessity is the mother of invention" more apt than in the quest for a snoring panacea. Thanks to Silentsleep, we learn, for example, that a Pennsylvania farmer devised a bed "which dropped a beanbag on the sleeper's head when his snores reached a certain noise level. If the snoring grew louder still, the apparatus unceremoniously dumped the victim on the floor."

In my own case, a few discreet inquiries eventually yielded a solution. My bedmate favors sleeping flat on his back, legs spread and mouth, alas, wide open. Now, with the first hint of a snore to break the tranquility of the bedroom, I prod him persistently and, in a motion similar to rolling up a baked streusel, nudge him off his back and onto his side where all discordant sounds are hushed.

Should this strategy eventually fail, I have one more move, a tactic as devious as the princess's pea: marbles sewn in the pajama collar will keep even the most determined slumberer safely and silently on his side.

1100 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. causes and prevention of snoring.
   b. marital problems.
   c. the uselessness of devices to stop snoring.
   d. medical causes of snoring.

2. The main idea of the article is that
   a. snoring causes marital problems that can lead to divorce.
   b. there is no cure for snoring.
   c. most snoring is a result of medical problems.
   d. there are many causes and many solutions for snoring.

Details

3. Sleep apnea is
   a. the most common cause of snoring.
   b. usually a sign of a serious medical problem.
   c. caused by cardiac arrhythmia.
   d. found in most people over sixty-five.

4. Which medical condition is more prevalent among snorers than other people?
   a. alcoholism.
   b. insomnia.
   c. hypertension.
   d. epilepsy.

5. A suggested way to stop people from snoring is to
   a. drench them with water each time they begin.
   b. roll them over on their side.
   c. attach an automatic buzzer to their jaw.
   d. have them take a stiff drink before retiring.

6. A symptom of sleep apnea that warrants seeing a doctor is
   a. cardiac arrhythmia.
   b. excessive daytime sleepiness.
   c. ceasing to breathe for short periods several times during the night.
   d. all of the above.

Inferences

7. From the article you can infer that
    a. snoring is usually a symptom of a more serious illness.
    b. snoring usually begins early in life.
    c. most people over sixty-five snore.
    d. snoring can begin at any time during a person's life.

8. It can be inferred that
    a. poor health is the major cause of snoring.
    b. a cure will soon be found for snoring.
    c. the person who snores doesn't know he or she does it.
    d. snoring is a serious problem in most marriages.

9. It can be inferred from the article that people who snore
    a. will usually stop without seeking help.
    b. can stop whenever they wish.
    c. are in no real medical danger most of the time.
    d. should see a doctor immediately.

10. Snoring is probably of most concern to
    a. the person who is snoring.
    b. people who are ill.
    c. doctors and researchers.
    d. the snorer's bed partner.

CRITICAL THINKING QUESTIONS

1. What effect does the use of unusual words such as *connubial, sans, chide,* and *baleful* have on the article?

2. Do you believe that the events in the article involving the author's husband really occurred? Why or why not?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

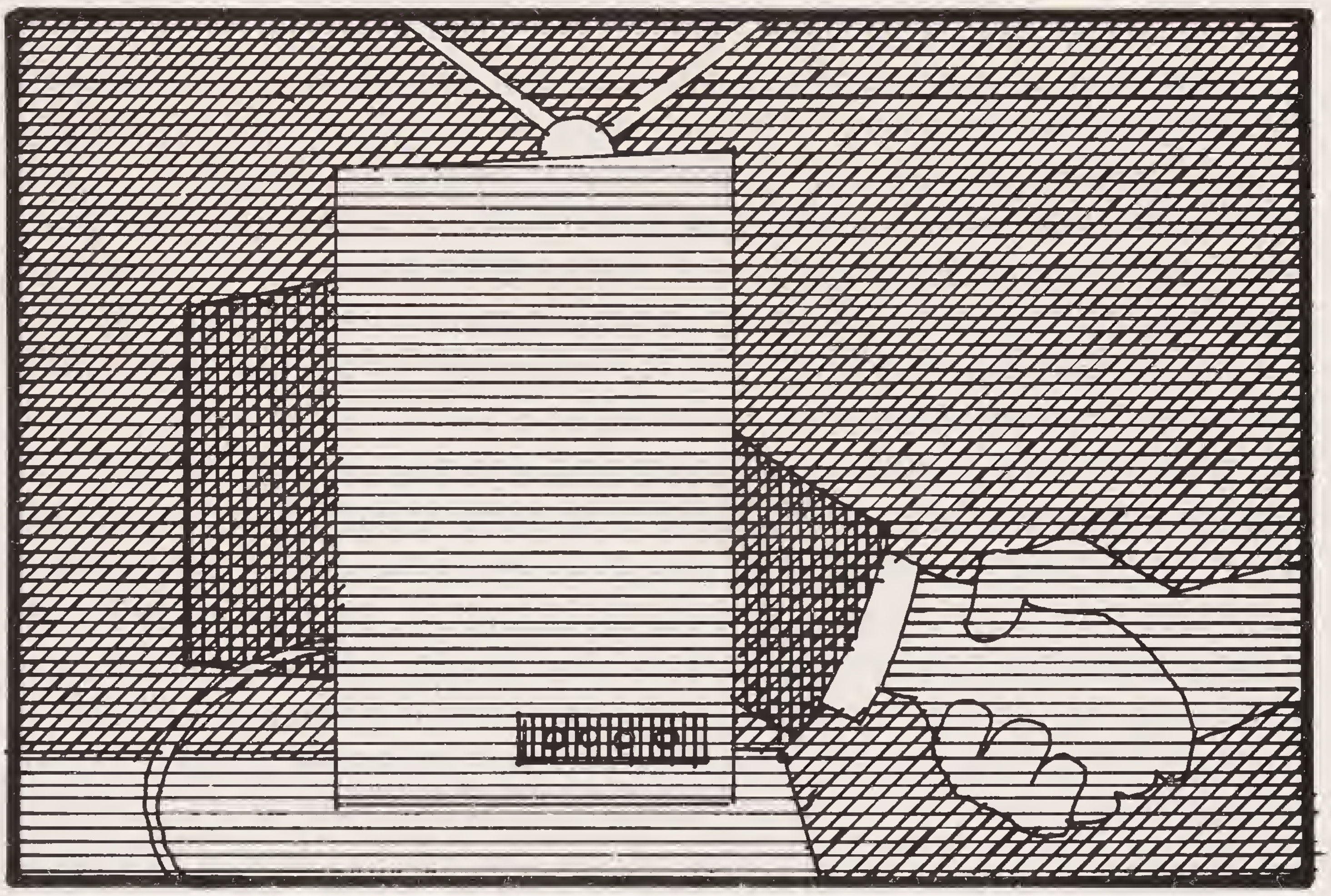
1. **connubial** (145)
    a. unmarried
    b. water
    c. double
    d. marital
2. **sans** (145)
    a. with
    b. without
    c. wearing the
    d. holding the
3. **baleful** (146)
    a. friendly
    b. tired
    c. evil
    d. happy
4. **arrhythmia** (147)
    a. steadiness
    b. irregularity
    c. rhythms
    d. beats
5. **panacea** (147)
    a. enlarger
    b. accessory
    c. supplement
    d. cure-all

Read this article. Write your starting time here: ________.

21

The Selling of the President

Edward Jay Whetmore



BACK IN 1960, when the role of advertising and PR in politics first became apparent, *Life* magazine quoted one campaign strategist as saying, "I can elect any person to office if he has $60,000, an IQ of at least 120, and can keep his mouth shut."

Since the 1896 campaign, the election of a President has been determined largely by the ability of information specialists to generate favorable publicity. In recent years that publicity has been supplanted by heavy spot buying on electronic media.

So many factors are involved in choosing a President that it is hard to say with any real empirical confidence how important any single medium is. The most talked-about medium in American politics is television. Highly publicized debates between candidates in 1960, 1976, and 1980 appear to have affected the outcomes. Richard Nixon (the early favorite) would probably not have lost to Kennedy were it not for his poor showing on TV. Similarly, the 1976 debates probably

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clinched Jimmy Carter's narrow victory over Gerald Ford, and Ronald Reagan appeared to be the victor in the 1980 debates.

Yet there were other elections where, according to political analyst Edward Chester, no amount of TV exposure could have changed the outcome: Goldwater versus Johnson in 1964 and Nixon versus McGovern in 1972. Television commercials seem to work best in close elections or in those where there is a large undecided vote. According to the Associated Press, Ford's TV spots during the 1976 campaign probably swung over 100,000 undecided voters a day during the last few months of the campaign.

What effect does television have on the candidates themselves? It dictates priorities that are different from those of an earlier day. The physical appearance of the candidate is increasingly important. Does he or she look fit, well-rested, secure? Losing candidates like Adlai Stevenson, Hubert Humphrey, and Richard Nixon all seemed to look "bad" on TV. Nixon overcame this problem in 1972 with ads that featured longer shots of him being "presidential"—flying off to China. Close-ups were avoided.

Both John F. Kennedy and Jimmy Carter seemed more at home with the medium, perhaps because both were youthful, informal, and physically active outdoor types. Dwight Eisenhower and Lyndon Johnson seemed to have a paternal, fatherly image on the small screen. All of the recent Presidents have learned how to use the medium to their advantage, to "stage" events so as to receive maximum favorable coverage. This has added to the already awesome power of the incumbency.

Television has changed the importance of *issues*. It can be argued that since the 1960 presidential debates we have elected people, not platforms. This is a major departure from earlier years. Franklin Roosevelt's radio charisma cannot be denied, but he was swept to power by one issue—the Great Depression.

All the print information we now receive is simpler and more condensed than ever before. Issues and print go together. Television is *images*, not issues. We develop a more personal, emotional feeling about the candidates. Jimmy Carter's spectacular rise to power was a testament to this new image orientation. No one really knew *what* he was going to do when he took office, since his entire campaign had been geared toward developing a relationship of trust with the electorate. "Trust me," he said. "I'll never lie to you."

A more recent example was the election of Reagan in 1980. For some this represented the ultimate television victory. After all, what other country can claim that it has actually elected an actor President? It can be argued that Americans were tired of Carter and that Reagan simply offered an alternative. Yet throughout the campaign he offered us a media "vision" of a "shining city on a hill." And what about his constant references to John Wayne, one of the "last great Americans"?

My father, a long-time politician in southern California, has a favorite saying—"The worst thing a candidate can do is get bogged down in the issues." This trend has alarmed countless media critics. Politicians, newscasters, and others have stood in line to denounce it. They assert that the important thing is *what candidates stand for*, not the candidates themselves. Almost everyone seems to agree that television has been detrimental to American politics; it has clouded the issues and confused the electorate.

Media researchers Thomas E. Patterson and Robert D. McClure say the power of TV has been overrated and that (1) "Viewers of the nightly network newscasts learn almost nothing of importance about a presidential election," and (2) "People are not taken in by advertising hyperbole and imagery . . . exposure to televised ads has *no effect on voters' images of the candidates.*" I disagree on both counts.

If the Watergate mess proved anything, it was that we need a President we are comfortable with, one we feel we *know* and can *trust*. Print afforded us no opportunity to get a "feel" for the person. We could study the issues, read the speeches, yes—but how would we "know" the candidate as we might a neighbor or casual acquaintance? Television (and television advertising) provides an audiovisual record of the candidate under all sorts of circumstances. It is with that knowledge that we can choose someone of integrity, at least someone with honorable intentions.

Of course, TV cannot guarantee honest candidates, but we rejected Richard Nixon in 1960 and we might have again had he not so successfully *avoided* any informal coverage. (Remember—he wouldn't let TV newscasters near him unless he had a suit on. For all we knew he wore a suit while walking on the beach.) Once he was President it was the intimate nature of the medium that helped bring him down. Even his well-rehearsed Watergate denials wouldn't work. He would sit there, surrounded by flags and piles of transcripts, and swear he was innocent. Yet the profuse sweat on his brow and the look in his eyes seemed to confirm his guilt.

Issues come and go, but we elect *people* to the presidency. In this fast-moving information environment, today's burning issue is tomorrow's historical footnote. It's far more important to develop a sense of what kind of person we are electing to the nation's highest office. Television affords us that opportunity in a way no other medium can.

1100 words

Write your ending time here: ________________

Subtract your starting time: ________________

Total time: ________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. presidential campaigning.
   b. the media's effect on political campaigns.
   c. the factors that make someone presidential material.
   d. the power of political machines.

2. The main idea of the article is that
   a. political machines are less powerful than they were in the last century.
   b. presidents are now elected through careful publicity campaigns.
   c. all presidential candidates must have good public relations people.
   d. anyone can be president.

Details

3. The first president whose television image helped elect him was
   a. John Kennedy.
   b. Ronald Reagan.
   c. Franklin D. Roosevelt.
   d. Richard Nixon.

4. The author's reaction to Patterson and McClure's statement that the media do not make a difference in campaigns was
   a. agreement.
   b. disagreement.
   c. no reaction.
   d. confusion.

5. Television commercials work best
   a. at the beginning of a campaign.
   b. just before a candidate visits a city.
   c. when there is a large undecided vote.
   d. to raise money during the campaign.

6. Today, the candidate must
   a. be younger than formerly.
   b. have a good physical appearance.
   c. be more formal than informal.
   d. sound highly educated.

Inferences

7. The author seems to feel that television
   a. has determined who was elected in every presidential election during the last thirty years.
   b. is the most effective way to give people a sense of identification with the candidate.
   c. has eliminated the need for a party platform.
   d. has eliminated the need for party machinery.

8. From the article we can infer that the author would require every candidate to
   a. publish a platform.
   b. take acting lessons.
   c. reveal the name of the public relations person running the campaign.
   d. engage in television debates during a presidential campaign.

9. The author seems to feel that television
   a. has made candidates reveal their stands on the issues.
   b. has increased the importance of newscasters.
   c. has confused the public in regard to presidential campaigns.
   d. might prevent the recurrence of scandals such as Watergate.

10. From the article you can infer that
    a. most candidates have similar political images.
    b. anyone can foster a good media image.
    c. the next President will be an outdoor type.
    d. the next President will have a definite media image.

CRITICAL THINKING QUESTIONS

1. Give ten adjectives that describe the image the current president is trying to project.

2. Based on the information in the article and on your knowledge of previous political campaigns, is the increased use of mass media and media experts in political campaigns a positive or negative factor? Explain your answer.

VOCABULARY CHECK

Here are five words that appeared in the article, with your page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **empirical** (151)
   a. data-based
   b. theory-based
   c. feeling of
   d. mistaken
2. **charisma** (152)
   a. voice
   b. speeches
   c. broadcasts
   d. appeal
3. **detrimental** (153)
   a. helpful
   b. opposite
   c. harmful
   d. agreeable
4. **hyperbole** (153)
   a. understatement
   b. tricks
   c. overstatement
   d. time
5. **profuse** (153)
   a. plentiful
   b. lack of
   c. small amount of
   d. slight

Read this article. Write your starting time here: ________.

22

Better Temper That Temper!

John Carey

WOMAN No. 1: You'll feel better if you get your anger out.
WOMAN No. 2: Anger? Why am I angry?
1: Because he left you, that's why.
2: Left me? What are you talking about? He died. He was an old man.
1: Yes, but underneath you are blaming him for not keeping his obligation to protect you forever.
2: Margaret . . . we both knew he was dying, and we had time to make our peace. I don't feel angry, I feel sad. I miss him.
1: Why are you so defensive? Why are you denying your true feelings?
2: Margaret, you are driving me crazy. *I don't feel angry, dammit!*
1: *(smiling):* So why are you shouting?

This exchange, overheard in a New York café, illustrates one of the most tenacious myths of popular psychology: that admitting and venting anger are the necessary first steps to health and happiness. Authorities from Konrad Lorenz to Ann Landers, from psychoanalysts to est instructors, warn of the dangers of bottled-up rage. Unreleased anger, frustration, and hostility, warn these secular priests of behavior, can cause sadness and depression, high blood pressure and heart disease, eating binges, ulcers, migraines, impotence, and even child abuse. "In short," claims a recent popular article, "by repressing your God-given talent for anger, you're killing yourself."

But the notion that letting off steam is good for you has a fatal flaw, according to psychologist Carol Tavris. "People are not teapots," she says. In a new and controversial book, "Anger: The Misunderstood Emotion," Tavris argues that in most cases, getting mad actually creates more problems than it solves, escalating the hostility and anxiety rather than clearing the air. She also maintains that some of the recommended exorcisms for anger, such as pouring out one's fury to a sympathetic ear or channeling it into a game of racquetball, are frequently ineffective. Tavris fears for a nation that needs to get everything off its chest. "A ventilationist society pays no attention to the social glue of

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John Carey, *Newsweek*, January 3, 1983, pp. 42–43. Copyright © 1983 by Newsweek, Inc. All rights reserved. Reprinted by permission.

kindness and empathy and is in danger of disintegrating from within," she says.

Primal Scream: People have not always been urged to vent their rage. "Be not hasty in thy spirit to be angry: for anger resteth in the bosom of fools," admonishes the Bible. The idea that getting mad is beneficial dates back to Freud and the early animal behaviorists, who believed that there is a fixed reservoir of aggressive energy in the body. Block that energy in one direction and it flows out in another, usually as anger. Although Freud later backed away from the belief that anger has a cathartic function, says Yale psychoanalyst Albert Rothenberg, the notion found ready acceptance in the more permissive society of the 1960s and 1970s, which spawned primal-scream therapy. "People wanted to hear that you could indulge yourself and your feelings," says Rothenberg.

In fact, some early studies did show that expressing anger was cathartic. When Jack Hokanson of Florida State University allowed male college students to retaliate with anger against fellow students who had frustrated them, their blood pressure dropped up to eight times faster than if they contained their anger. Subsequent experiments, however, shook Hokanson's belief in the cathartic theory. Blood pressure, he found, did not drop more quickly when volunteers vented their rage against an authority figure, such as a teacher, who had angered them. Nor did it help to yell at innocent bystanders or to fantasize about taking revenge.

Hokanson's biggest surprise came when he brought women into his lab. He discovered that their blood pressure dropped much more rapidly when they responded to their tormentors with friendship rather than anger. "The finding raised major questions about the cathartic theory," he says. "It suggested that the responses we make while angry are the ones we have learned are effective." The psychologist then tested whether there are innate differences in this area between men and women: he designed experiments that rewarded aggressive anger in women and friendliness in men. The original gender difference was reversed; venting rage turned out to be cathartic for women while being conciliatory actually lowered blood pressure in men. "The myth that ventilating anger brings down tension is long gone," Hokanson says.

Hostility: Talking about anger appears to be equally ineffective. Psychologists at the University of California at San Diego asked 100 laid-off aerospace workers how they felt about their companies and their supervisors. Then they had each man fill out a report describing his feelings. The psychologists discovered that the men who let out anger in conversation expressed even more hostility in their reports. Fuming to a third party may make people feel better because it serves to legitimize their rage, Tavris concludes, but it perpetuates, even increases, feelings of anger by rehearsing the emotion.

Active sports have commonly been viewed as effective substitutes for punching a tyrannical boss or attacking an enemy. They do make choleric people feel less angry, says Leonard Berkowitz of the University of Wisconsin, but only because concentrating on—and physically enjoying—the activity takes their minds off their grievances. "Anger will dissolve equally well during a sedentary chess game," he says. The popular notion that violent sports like football and ice hockey function as safety valves for aggression in society, that people who play hard make less war, also seems to be wrong. When anthropologist Richard Sipes compared 10 peaceful cultures—including Lapp herdsmen, Bushmen hunter/gatherers and American Hutterites—with 10 constantly warring societies, such as the belligerent Aztecs and quarrelsome Thais, he discovered that the pacific peoples played far fewer combative games than the bellicose cultures.

Although letting anger out does not necessarily make people feel better, many psychologists and psychoanalysts still believe that holding it back is unhealthy, too. "Ninety-nine percent of the cases of severe anxiety I see are related to repressed anger," says psychoanalyst Theodore Rubin. Tavris counters that anger is more often a symptom than a cause of distress; she points out that depressed people often express more anger as they get more depressed. "The clinical maxim for depression was always, 'Go after the underlying anger,'" explains Rothenberg. "But when patients express anger, it does not solve their problems."

Contrary to popular belief, argues Tavris, clamping a lid on obviously boiling rage is not worse for you than letting it all out. In fact, the evidence suggests that both strategies can be unhealthy. Psychologists led by Ernest Harburg of the University of Michigan asked hundreds of men and women in four neighborhoods in Detroit how they would respond to such situations as an unjust boss, a prejudiced neighbor or an abrasive policeman. Both people who said they would explode in anger as well as those who said they would feel anger but would not express it had significantly higher blood pressure than respondents who said they would try to reason with offenders. Other studies have implicated both suppressed anger and frequent angry outbursts in heart disease. The danger that rage poses to health, suggests Tavris, comes not from expressing it or suppressing it, but from letting it linger and fester, spawning anxiety and feelings of impotence.

Certainly, letting anger out may be just what the doctor ordered. Take the case of Sonia Johnson, who was eventually excommunicated from the Mormon Church for supporting the Equal Rights Amendment. After a humiliating church meeting, she locked herself in a room and "for two solid hours I raged at God at the top of my lungs," she wrote recently. "When my vocal cords and lungs finally gave out

. . . I discovered to my amazement that I felt wonderful—absolutely euphoric." Violent anger, Tavris argues, is most effective, cathartic and healthy when it meets three conditions: when it is a legitimate cry for justice, when it is directed against the offending target and when at worst it leads to no retaliation or at best brings about the desired change. Without righteous and violent anger there would still be moneylenders in the temple, blacks in the back of the bus, and women in the kitchen.

Liability: Ire is an instinctive physical and emotional response when things don't go the way they are supposed to. But its expression, from the constant bickering of the !Kung-san Bushmen to the colorful Yiddish curses born amid the hardships of the Russian *shtetl,* is a matter of social and political choice. Some cultures, like the Utkuhikhalingmiut Eskimos, shun anyone with a volatile temper; others, like the Gururumba of New Guinea and our own, often accept passionate anger as an excuse for irresponsible and even criminal acts. Just as methods of expressing anger help us understand different cultures, they also highlight individual differences. Using personality tests and an anger scale, Mary Biaggio of the University of Idaho found that college students who were easily aroused to anger were more narrow-minded, less tolerant, less perceptive about other people and less socially responsible than their more placid colleagues. Being overly quick to anger can be a social liability as well as a fast track to disease.

Tavris's book will be attacked for its polemical tone and its tendency to highlight evidence that supports the author's arguments. Yet both Tavris and her critics reach basically the same conclusions and the same prescriptions for dealing with anger. When your heart races, your blood boils and you want to strangle someone, *stop*. Figure out why you are angry and who you are angry at. Then decide if rage is the right response. Most grievances, Tavris believes, are not worthy of anger and the best solution may simply be avoiding the cause. But if you do express anger, be assertive and courteous, not aggressive and threatening. If the advice sounds familiar, that's because it is. Ultimately, says Tavris, "my book is just a plea for a little common sense."

1500 words

Write your ending time here: ______________________

Subtract your starting time: ______________________

Total time: ______________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. cultural responses to anger.
   b. the expression of anger.
   c. the ill effects of hostility.
   d. throwing temper tantrums.

2. The main idea of the article is that
   a. showing hostility can be harmful.
   b. men and women react differently to hostility.
   c. displaying anger is healthy.
   d. anger is an effective way to solve marital problems.

Details

3. Mary Biaggio's study found that college students who anger easily
   a. get rid of their problem more quickly.
   b. are less perceptive about other people.
   c. are more socially responsible.
   d. are less prone to disease.

4. The author and her critics would agree that
   a. anger should be expressed.
   b. people need to evaluate whether rage is the best response.
   c. expressing anger solves the problem.
   d. anger is rarely justified.

5. Venting rage in men and women
   a. takes the same forms.
   b. differs in its effects.
   c. reduces tension.
   d. is best done verbally.

6. Tavris argues that violent anger is healthy and an effective cathartic when
   a. it is a legitimate cry for justice.
   b. it is directed toward the person who made you angry.
   c. it leads to no retaliation or brings about the desired change.
   d. all of the above are true.

Inferences

7. The author implies that
   a. positive outlets for anger differ from one person to another.
   b. some people should never express anger.
   c. active sports are better outlets for anger than passive activities.
   d. all people get angry over the same things.

8. Recent research about expressing anger has
   a. proven Freud's theories correct.
   b. proven that expressing rage is a primal response.
   c. brought into question the notion that venting anger reduces the chances of ulcers.
   d. proven that most anger is justified.

9. From the article you can infer that
   a. all psychologists agree with the theory of primal scream.
   b. the reactions to venting anger differ from culture to culture.
   c. the author never gets angry.
   d. wars could be avoided if people were taught not to vent their anger.

10. Tavris' book probably
   a. will become widely accepted because of its unbiased views.
   b. will be widely used as a textbook on anger by universities.
   c. is controversial among psychologists.
   d. will lead to different methods of child rearing.

CRITICAL THINKING QUESTIONS

1. Briefly explain the evidence for and against the theory of catharsis.

2. Why do you think the author introduces the article with dialogue?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

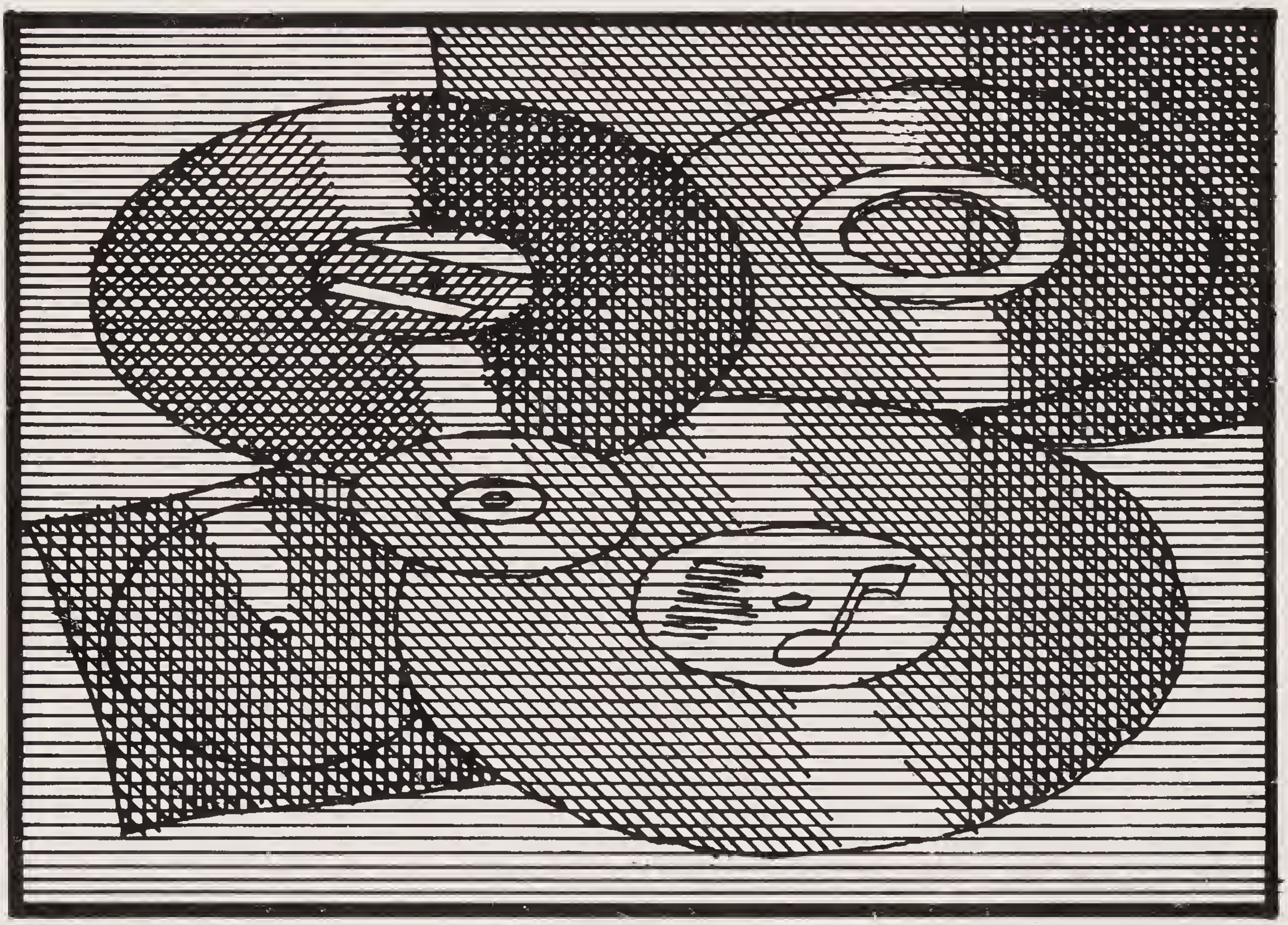
1. **cathartic** (158)
   a. believable
   b. dangerous
   c. cleansing
   d. religious
2. **choleric** (159)
   a. bad-tempered
   b. kind
   c. shy
   d. playful
3. **bellicose** (159)
   a. friendly
   b. quiet
   c. warlike
   d. ancient
4. **euphoric** (160)
   a. stubborn
   b. confused
   c. angry
   d. overjoyed
5. **polemical** (160)
   a. stately
   b. open-minded
   c. argumentative
   d. harmful

Read this article. Write your starting time here: __________.

23

Record Innovations Over the Years Recalled

Dr. Demento



NEARLY EVERY RECORD made in the past 25 years, no matter where it was made, will play on any modern phonograph. There are turntables available today that will play records made in the 1890s, and then, with a quick adjustment, can deliver state-of-the-art stereo sound from the latest releases.

It's surprising how similar those billions of records are to each other. There are, of course, exceptions. Most notable today is the new silver Compact Disc, or CD. Twelve centimeters (4¾ inches) in diameter, each plays up to 1 hour of music. CDs deliver superior sound while avoiding many bothersome problems of conventional records, such as scratches and wear. Using technology borrowed from laser videodiscs, they're not really phonograph records at all and won't play

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Advertising supplement to the *Los Angeles Times* 10/16/83, pp. 6, 17, 18.

on any phonograph; they require new players that look more like tape decks.

The silver CDs may be the audio medium of the not-too-distant future. However, the conventional record, or "black disc" as it's known in the music industry, should be around for a while yet, most likely until the 100th anniversary of the first commercial disc records, released in 1894.

Despite the technological sophistication and excellence evident in today's stereo records, many aspects of records have remained constant since 1894. Their color, for instance. The earliest discs were made of hard rubber, which was naturally black. Modern vinyl, naturally colorless, is dyed black, because people have always expected records to be black.

Every disc record made since 1894 has been made to turn clockwise, and in all but a few the groove progresses from the outer edge of the disc toward its center, rather than the reverse. The manufacturing process has been much refined and automated, but the basic steps remain the same, as does the method of affixing the labels. The center hole of a modern LP is exactly the same size as on an 1894 platter, 9/32 of an inch.

The speeds, of course, have changed. Early discs ranged from 60 rpm to more than 100 rpm. By 1910 Victor, the largest disc maker, had standardized at 78 rpm, while Columbia and others preferred 80 rpm. Not until 1925 when electric phonographs began to replace spring-wound models, did the industry standardize at 78 (actually 78.26) rpm.

No sooner had that been accomplished, than engineers discovered that electric technology enabled them to cut records at much slower speeds. This allowed classical compositions, for instance, to be recorded without the irritating necessity of changing discs in mid-movement.

The speed of 33⅓ rpm was chosen arbitrarily, and in 1930 Victor, just acquired by RCA, began selling plastic long-playing records looking a bit like today's albums. Depression-ridden 1930 was not, however, a good time to ask Americans to buy expensive new phonographs to play the discs, which did not sound quite as good as the best 78s of the period. Home record players were to remain standardized at 78 rpm for another two decades.

The 33 rpm speed caught on immediately, however, in the radio industry. By 1935 virtually every American radio station had installed "transcription" turntables turning at 33 rpm and accommodating 16-inch discs. It was on these huge platters that the music, comedy and drama of the Golden Age of Radio was circulated and preserved.

Transcriptions were too bulky, clumsy and expensive to be practical for retail merchandising. But in 1947, Peter Goldmark, an engineer for Columbia Records, perfected a system for cutting 12-and 10-inch 33 rpm discs with a "microgroove" one-third as wide as the groove on standard 78s. The sound quality was excellent this time, and Columbia wisely offered inexpensive turntables on which to play the records. The Columbia LP, introduced in 1948, was an instant success; within two years it had completely replaced the 78 rpm disc for classical music.

The LP format was quickly embraced by other record manufacturers, with one prominent exception: RCA Victor, America's largest recordmaker at the time.

RCA insisted on doing microgroove its own way, introducing in 1949 its 45 rpm, seven-inch discs with 1½-inch centerholes. The larger hole was designed to work with special rapid changers with which RCA hoped to counter the advantage of Columbia's longer-playing discs.

And so began the Great War of the Speeds. Each side was firmly convinced that the other's speed would soon become a museum piece. To the astonishment of many, both speeds survived and prospered, as they do to this very day: 45 rpm for singles, which in some countries are made with the smaller 9/32-inch centerholes, and 33 rpm for albums. Before the Great War of the Speeds settled into its long-running stalemate, various attempts to supplant each speed's territory were rebuffed. Before finally agreeing to make its own LPs in 1951, RCA packaged classical works in little box sets of 45s.

For a few years in the 1950s, Extended Play 45s, EPs, were popular. These economical 7-inch discs with LP-like cardboard covers contained two or three songs on each side. The longer playing time was achieved at the expense of sound quality, and when high fidelity came in, EPs died out.

Columbia tried hard to launch a 7-inch 33 rpm single, first in 1948 and again in 1960; both efforts were rejected by the public and especially by the jukebox industry, which did, however, accept 7-inch 33 rpm mini-albums that were made for years exclusively for jukeboxes.

The real loser in the speed war was the venerable 78. After making them for more than half a century, recordmakers began phasing out the 10-inch pop 78s in 1956, and they were extinct by 1960.

Throughout this period turntables were made with three speeds. In the early 1960s many of them had four—78, 45, 33 and 16 (actually 16⅔, half of 33⅓). Many people who owned these turntables wondered what the 16 speed was for, having never seen a 16 rpm record. The Audio Book Co. of St. Joseph, Mich. did market a line of 7-inch 16 rpm discs containing the entire New Testament, plus nine books of the Old Testament, along with literary classics and a few musical offerings. A few small companies also tried 12-inch 16 rpm discs, playing nearly an hour per side. Consumers, however, did not find the added playing time sufficient compensation for the 16 rpm discs' poorer sound.

Actually, the most popular use of the 16 rpm speed was Talking Book records for the blind. Visually handicapped people were supplied with a turntable which, when placed on top of another turntable, turned at half the speed of the one underneath. Originally intended to slow 33 rpm down to 16 rpm, it served equally well to slow 16 rpm down to 8⅓ rpm, the speed used for Talking Books today.

The 16 rpm was also used for background music systems, and for Highway Hi-Fi, an automobile phonograph system developed by Columbia in 1957 for the Chrysler Corp. The tiny grooves of Highway Hi-Fi discs didn't take to the highways at all well, and the project was quickly abandoned.

For the past quarter-century we've been living in a two-speed world. This hasn't stopped recordmakers from introducing a few more oddities. Soundsheets—paper-thin, highly flexible records often bound into books and magazines—have the distinction of being virtually the world's only square records. In 1960, a magazine flourished briefly that was composed entirely of soundsheets. Called "Echo, The Magazine That You Play On Your Phonograph," it sold for $1.50. A typical issue offered instructions and music for the Madison, a dance fad of the day; two comedy bits by Bob and Ray, an interview with artist Salvador Dali; live recordings from a college jazz festival and "The City Dog: A Photomontage."

"Echo" was not a success, but other magazines as diverse as "Mad," "Sing Out!" and "Trouser Press" have used soundsheets effectively.

The same thin, flexible plastic was also used for what was possibly the record business' greatest fiasco of the 1960s: hip-pocket records. For six months in 1968, it seemed like the music industry trades could talk of nothing else.

Hip-pocket records were promoted by the Philco-Ford Corp. The discs were a mere 3⅞ inches in diameter, turned at 45 rpm, played three minutes plus on each side and sold for 69 cents (later 49 cents). You could carry 25 or so in your hip pocket if you left off the sleeves, which were 6¼-by-5 inches. They were ideal companions for the little battery-powered phonographs people used to take to the beach. But these phonographs were quickly being supplanted by tape players—so much for hip pocket records, which were also handicapped by their inability to offer many major-label artists, such as The Beatles.

Tiny 45s didn't work out, but giant 45s have done very well recently, especially in Canada and Europe, where 45 rpm is the preferred speed for the 12-inch singles and mini-albums, whose emergence has been one of the major record-business phenomena of the 1980s.

The mini-album is, of course, a higher-fidelity counterpart of those 7-inch 45 rpm EPs from the 1950s, but unlike the latter it appears to be here to stay. Most American recordmakers prefer 33 rpm for 12-inch records of whatever length, but there are enough exceptions to cause occasional confusion in disco DJ booths.

Such confusion, however, need not bother anyone who's thinking of giving records or cassettes as a gift. While the prerecorded video industry remains troubled by format incompatibility and attendant confusion, record fans can have the certainty that all of today's records will play on all of today's phonographs, recalling with bemusement the days when that wasn't the case.

1600 words

Write your ending time here: ______________________

Subtract your starting time: ______________________

Total time: ______________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. current trends in audio.
   b. the history of records.
   c. a comparison of records and prerecorded video.
   d. popular music.

2. The main idea is that
   a. records keep improving.
   b. the CD will take over the record industry.
   c. the "black disc" is here to stay.
   d. records have an interesting history.

Details

3. The first commercial disc records were introduced nearly
   a. 25 years ago.
   b. 200 years ago.
   c. 50 years ago.
   d. 100 years ago.

4. A soundsheet is
   a. a very tiny record.
   b. a very thin record.
   c. a small long-playing record.
   d. similar to a piano roll.

5. Hip-pocket records were unpopular because
   a. they broke too easily.
   b. only the major stars were recorded.
   c. they were supplanted by tape recorders.
   d. all of the above are true.

6. The reason 78-rpm records died out was
   a. the invention of the microgroove.
   b. the opposition of RCA.
   c. that they were too expensive.
   d. changes in the design of turntables.

Inferences

7. The author implies that the prerecorded video industry will probably
   a. will replace CDs.
   b. become more standardized.
   c. decline.
   d. remain pretty much the same.

8. The author implies that records and tapes will be replaced by CDs
   a. in the next two years.
   b. in about ten years.
   c. over the record industry's dead body.
   d. no sooner than the year 2000.

9. The author implies that much of the success of the record industry is a result of
   a. promotion.
   b. high technology.
   c. flexibility.
   d. standardization.

10. You can infer from the article that competition in the record industry had the effect of
    a. stifling creativity.
    b. encouraging innovation.
    c. commercializing music.
    d. keeping record prices low.

CRITICAL THINKING QUESTIONS

1. Name four ways in which records today are similar to records in the 1890s.

2. What changes do you anticipate in the record industry over the second century of its existence?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **affixing** (165)
   a. removing
   b. counting
   c. printing
   d. attaching

2. **arbitrarily** (165)
   a. quickly
   b. repeatedly
   c. carefully
   d. at random

3. **rebuffed** (166)
   a. rejected
   b. anticipated
   c. created
   d. accepted

4. **venerable** (166)
   a. new and unknown
   b. large and fragile
   c. old and respected
   d. awkward and unusable

5. **bemusement** (168)
   a. surprise
   b. amusement
   c. bewilderment
   d. pride

Read this article. Write your starting time here: ________.

24

Life According to TV

THE LATE PADDY CHAYEFSKY, who created Howard Beale, would have loved George Gerbner. In "Network," Chayefsky marshaled a scathing, fictional assault on the values and methods of the people who control the world's most potent communications instrument. In real life, Gerbner, perhaps the nation's foremost authority on the social impact of television, is quietly using the disciplines of behavioral research to construct an equally devastating indictment of the medium's images and messages. More than any spokesman for a pressure group, Gerbner has become the man that television watches. From his cramped, book-lined office at the University of Pennsylvania springs a steady flow of studies that are raising executive blood pressures at the networks' sleek Manhattan command posts.

George Gerbner's work is uniquely important because it transports the scientific examination of television far beyond familiar children-and-violence arguments. Rather than simply studying the link between violence on the tube and crime in the streets, Gerbner is exploring wider and deeper terrain. He has turned his lens on TV's hidden victims—women, the elderly, blacks, blue-collar workers and other groups—to document the ways in which video-entertainment portrayals subliminally condition how we perceive ourselves and how we view those around us. Gerbner's subjects are not merely the impressionable young; they include all the rest of us. And it is his ominous conclusion that heavy watchers of the prime-time mirror are receiving a grossly distorted picture of the real world that they tend to accept more readily than reality itself.

The 63-year-old Gerbner, who is dean of Penn's Annenberg School of Communications, employs a methodology that meshes scholarly observation with mundane legwork. Over the past 15 years, he and a tireless trio of assistants (Larry Gross, Nancy Signorielli and Michael Morgan) videotaped and exhaustively analyzed 1,600 prime-time programs involving more than 15,000 characters. They then drew up mul-

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Newsweek, Dec. 6, 1982, pp. 126–140. Copyright © 1982 by Newsweek, Inc. All rights reserved. Reprinted by permission.

tiple-choice questionnaires that offered correct answers about the world at large along with answers that reflected what Gerbner perceived to be the misrepresentations and biases of the world according to TV. Finally, these questions were posed to large samples of citizens from all socioeconomic strata. In every survey, the Annenberg team discovered that heavy viewers of television (those watching more than four hours a day), who account for more than 30 percent of the population, almost invariably chose the TV-influenced answers, while light viewers (less than two hours a day) selected the answers corresponding more closely to actual life. Some of the dimensions of television's reality warp:

Sex: Male prime-time characters outnumber females by 3 to 1 and, with a few star-turn exceptions, women are portrayed as weak, passive satellites to powerful, effective men. TV's male population also plays a vast variety of roles, while females generally get typecast as either lovers or mothers. Less than 20 percent of TV's married women with children work outside the home—as compared with more than 50 percent in real life. The tube's distorted depictions of women, concludes Gerbner, reinforce stereotypical attitudes and increase sexism. In one Annenberg survey, heavy viewers were far more likely than light ones to agree with the proposition: "Women should take care of running their homes and leave running the country to men."

Age: People over 65, too, are grossly underrepresented on television. Correspondingly, heavy-viewing Annenberg respondents believe that the elderly are a vanishing breed, that they make up a smaller proportion of the population today than they did 20 years ago. In fact, they form the nation's most rapidly expanding age group. Heavy viewers also believe that old people are less healthy today than they were two decades ago, when quite the opposite is true. As with women, the portrayals of old people transmit negative impressions. In general, they are cast as silly, stubborn, sexually inactive and eccentric. "They're often shown as feeble grandparents bearing cookies," says Gerbner. "You never see the power that real old people often have. The best and possibly only time to learn about growing old with decency and grace is in youth. And young people are the most susceptible to TV's messages."

Race: The problem with the medium's treatment of blacks is more one of image than of visibility. Though a tiny percentage of black characters come across as "unrealistically romanticized," reports Gerbner, the overwhelming majority of them are employed in subservient, supporting roles—such as the white hero's comic sidekick. "When a black child looks at prime time," he says, "most of the people he sees doing interesting and important things are white." That imbalance, he goes on, tends to teach young blacks to accept minority status as naturally inevitable and even deserved. To assess the impact of such portrayals on the general audience, the Annenberg survey forms included questions like "Should white people have the right to keep blacks out of their neighborhoods?" and "Should there be laws against marriages between blacks and whites?" The more that viewers watched, the more they answered "Yes" to each question.

Work: Heavy viewers greatly overestimated the proportion of Americans employed as physicians, lawyers, athletes and entertainers, all of whom inhabit prime-time in hordes. A mere 6 to 10 percent of television characters hold blue-collar or service jobs vs. about 60 percent in the real work force. Gerbner sees two dangers in TV's skewed division of labor. On the one hand, the tube so overrepresents and glamorizes the elite occupations that it sets up unrealistic expectations among those who must deal with them in actuality. At the same time, TV largely neglects portraying the occupations that most youngsters will have to enter. "You almost never see the farmer, the factory worker or the small businessman," he notes. "Thus not only do lawyers and other professionals find they cannot measure up to the image TV projects of them, but children's occupational aspirations are channeled in unrealistic directions." The Gerbner team feels this emphasis on high-powered jobs poses problems for adolescent girls, who are also presented with views of women as homebodies. The two conflicting views, Gerbner says, add to the frustration over choices they have to make as adults.

Health: Although video characters exist almost entirely on junk food and quaff alcohol 15 times more often than water, they manage to remain slim, healthy and beautiful. Frequent TV watchers, the Annenberg investigators found, eat more, drink more, exercise less and possess an almost mystical faith in the curative powers of medical science. Concludes Gerbner: "Television may well be the single most pervasive source of health information. And its overidealized images of medical people, coupled with its complacency about unhealthy lifestyles, leaves both patients and doctors vulnerable to disappointment, frustration and even litigation."

Crime: On the small screen, crime rages about 10 times more often than in real life. But while other researchers concentrate on the propensity of TV mayhem to incite aggression, the Annenberg team has studied the hidden side of its imprint: fear of victimization. On television, 55 percent of prime-time characters are involved in violent confrontations once a week; in reality, the figure is less than 1 percent. In all demographic groups in every class of neighborhood, heavy viewers overestimated the statistical chance of violence in their own lives and harbored an exaggerated mistrust of strangers—creating what Gerbner calls a "mean-world syndrome." Forty-six percent of heavy viewers who live in cities rated their fear of crime "very serious" as opposed to 26 percent for light viewers. Such paranoia is especially acute among TV entertainment's most common victims: women, the elderly, nonwhites, foreigners and lower-class citizens.

Video violence, proposes Gerbner, is primarily responsible for imparting lessons in social power: it demonstrates who can do what to whom and get away with it. "Television is saying that those at the bottom of the power scale cannot get away with the same things that a white, middle-class American male can," he says. "It potentially conditions people to think of themselves as victims."

At a quick glance, Gerbner's findings seem to contain a cause-and-effect, chicken-or-the-egg question. Does television make heavy viewers view the world the way they do or do heavy viewers come from the poorer, less experienced segment of the populace that regards the world that way to begin with? In other words, does the tube create or simply confirm the unenlightened attitudes of its most loyal audience? Gerbner, however, was savvy enough to construct a methodology largely immune to such criticism. His samples of heavy viewers cut across all ages, incomes, education levels and ethnic backgrounds—and every category displayed the same tube-induced misconceptions of the world outside.

Needless to say, the networks accept all this as enthusiastically as they would a list of news-coverage complaints from the Ayatollah Khomeini. Even so, their responses tend to be tinged with a singular respect for Gerbner's personal and professional credentials. The man is no ivory-tower recluse. During World War II, the Budapest-born Gerbner parachuted into the mountains of Yugoslavia to join the partisans fighting the Germans. After the war, he hunted down and personally arrested scores of high Nazi officials. Nor is Gerbner some videophobic vigilante. A Ph.D. in communications, he readily acknowledges TV's beneficial effects, noting that it has abolished parochialism, reduced isolation and loneliness and provided the poorest members of society with cheap, plug-in exposure to experiences they otherwise would not have. Funding for his research is supplied by such prestigious bodies as the National Institute of Mental Health, the surgeon general's office and the American Medical Association, and he is called to testify before congressional committees nearly as often as David Stockman.

Mass Entertainment: When challenging Gerbner, network officials focus less on his findings and methods than on what they regard as his own misconceptions of their industry's function. "He's looking at television from the perspective of a social scientist rather than considering what is mass entertainment," says Alfred Schneider, vice president of standards and practices at ABC. "We strive to balance TV's social effects with what will capture an audience's interests. If you showed strong men being victimized as much as women or the elderly, what would comprise the dramatic conflict? If you did a show truly representative of society's total reality, and nobody watched because it wasn't interesting, what have you achieved?"

CBS senior vice president Gene Mater also believes that Gerbner is implicitly asking for the theoretically impossible. "TV is unique in its problems," says Mater. "Everyone wants a piece of the action. Everyone feels that their racial or ethnic group is underrepresented or should be portrayed as they would like the world to perceive them. No popular entertainment form, including this one, can or should be an accurate reflection of society."

On that point, at least, Gerbner is first to agree; he hardly expects television entertainment to serve as a mirror image of absolute truth. But what fascinates him about this communications medium is its marked difference from all others. In other media, customers carefully choose what they want to hear or read: a movie, a magazine, a best seller. In television, notes Gerbner, viewers rarely tune in for a particular program. Instead, most just habitually turn on the set—and watch by the clock rather than for a specific show. "Television viewing fulfills the criteria of a ritual," he says. "It is the only medium that can bring to people things they otherwise would not select." With such unique power, believes Gerbner, comes unique responsibility: "No other medium reaches into every home or has a comparable, cradle-to-grave influence over what a society learns about itself."

Match: In Gerbner's view, virtually all of TV's distortions of reality can be attributed to its obsession with demographics. The viewers that prime-time sponsors most want to reach are white, middle-class, female and between 18 and 49—in short, the audience that purchases most of the consumer products advertised on the tube. Accordingly, notes Gerbner, the demographic portrait of TV's fictional characters largely matches that of its prime commercial targets and largely ignores everyone else. "Television," he concludes, "reproduces a world for its own best customers."

Among TV's more candid executives, that theory draws considerable support. Yet by pointing a finger at the power of demographics, Gerbner appears to contradict one of his major findings. If female viewers are so dear to the hearts of sponsors, why are female characters cast in such unflattering light? "In a basically male-oriented power structure," replies Gerbner, "you can't alienate the male viewer. But you can get away with offending women because most women are pretty well brainwashed to accept it." The Annenberg dean has an equally tidy explanation for another curious fact. Since the corporate world provides network television with all of its financial support, one would expect businessmen on TV to be portrayed primarily as good guys. Quite the contrary. As any fan of "Dallas," "Dynasty" or "Falcon Crest" well knows, the image of the company man is usually that of a mendacious, dirty-dealing rapscallion. Why would TV snap at the hand that feeds it? "Credibility is the way to ratings," proposes Gerbner. "This country has a populist tradition of bias against anything big, including big business. So to retain credibility, TV entertainment shows businessmen in relatively derogatory ways."

In the medium's Hollywood-based creative community, the gospel of Gerbner finds some passionate adherents. Rarely have TV's best and brightest talents viewed their industry with so much frustration and anger. The most sweeping indictment emanates from David Rintels, a two-time Emmy-winning writer and former president of the Writers Guild of America, West. "Gerbner is absolutely correct and it is the people who run the networks who are to blame," says Rintels. "The networks get bombarded with thoughtful, reality-oriented scripts. They simply won't do them. They slam the door on them. They believe that the only way to get ratings is to feed viewers what conforms to their biases or what has limited resemblance to reality. From 8 to 11 o'clock each night, television is one long lie."

Innovative thinkers such as Norman Lear, whose work has been practically driven off the tube, don't fault the networks so much as the climate in which they operate. Says Lear: "All of this country's institutions have become totally fixated on short-term bottom-line thinking. Everyone grabs for what might succeed today and the hell with tomorrow. Television just catches more of the heat because it's more visible." Perhaps the most perceptive assessment of Gerbner's conclusions is offered by one who has worked both sides of the industry street. Deanne Barkley, a former NBC vice president who now helps run an independent production house, reports that the negative depictions of women on TV have made it "nerve-racking" to function as a woman within TV. "No one takes responsibility for the social impact of their shows," says Barkley. "But then how do you decide where it all begins? Do the networks give viewers what they want? Or are the networks conditioning them to think that way?"

Gerbner himself has no simple answer to that conundrum. Neither a McLuhanesque shaman nor a Naderesque crusader, he hesitates to suggest solutions until pressed. Then out pops a pair of provocative notions. Commercial television will never democratize its treatments of daily life, he believes, until it finds a way to broaden its financial base. Coincidentally, Federal Communications Commission chairman Mark Fowler seems to have arrived at much the same conclusion. In exchange for lifting such government restrictions on TV as the fairness doctrine and the equal-time rule, Fowler would impose a modest levy on station owners called a spectrum-use fee. Funds from the fees would be set aside to finance programs aimed at specialized tastes rather than the mass appetite. Gerbner enthusiastically endorses that proposal: "Let the ratings system dominate most of prime time but not every hour of every day. Let some programs carry advisories that warn: 'This is not for all of you. This is for nonwhites, or for religious people or for the aged and the handicapped. Turn it off unless you'd like to eavesdrop.' That would be a very refreshing thing."

Role: In addition, Gerbner would like to see viewers given an active role in steering the overall direction of television instead of being obliged to passively accept whatever the networks offer. In Britain, he points out, political candidates debate the problems of TV as routinely as the issue of crime. In this country, proposes Gerbner, "every political campaign should put television on the public agenda. Candidates talk about schools, they talk about jobs, they talk about social welfare. They're going to have to start discussing this all-pervasive force."

There are no outright villains in this docudrama. Even Gerbner recognizes that network potentates don't set out to proselytize a point of view; they are simply businessmen selling a mass-market product. At the same time, their 90 million nightly customers deserve to know the side effects of the ingredients. By the time the typical American child reaches the age of reason, calculates Gerbner, he or she will have absorbed more than 30,000 electronic "stories." These stories, he suggests, have replaced the socializing role of the preindustrial church: they create a "cultural mythology" that establishes the norms of approved behavior and belief. And all Gerbner's research indicates that this new mythological world, with its warped picture of a sizable portion of society, may soon become the one most of us think we live in.

Who else is telling us that? Howard Beale and his eloquent alarms have faded into off-network reruns. At the very least, it is comforting to know that a real-life Beale is very much with us . . . and *really* watching.

3000 words

Write your ending time here: ______________________________

Subtract your starting time: ______________________________

Total time: ______________________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. TV shows.
   b. producing popular TV shows.
   c. how people rate TV shows.
   d. stereotyping on TV shows.

2. The main idea is that
   a. TV shows are stereotyping more than in the past.
   b. TV affects how people see the real world.
   c. children are seeing more TV than ever before.
   d. producing popular TV shows is becoming more difficult.

Details

3. Which of the following groups is not mentioned as being "victimized" by TV shows?
   a. women
   b. minorities
   c. blue-collar workers
   d. all are being victimized.

4. According to Gerbner, the elderly are portrayed as being
   a. too domineering.
   b. overly romanticized.
   c. silly.
   d. conservative.

5. People who watch a lot of TV are more likely to
   a. realize that TV characters don't reflect real life.
   b. generalize TV situations to real life.
   c. enjoy comedy rather than drama.
   d. realize that the roles of women are changing.

6. Gerbner
   a. expects TV to serve as a mirror image of the world.
   b. realizes that TV viewers carefully choose what they want to see.
   c. is planning to produce TV programs.
   d. would like to see viewers take a more active role in determining what shows are broadcast.

Inferences

7. The author implies that
   a. TV has positive aspects.
   b. the most popular shows are those that mirror the real world.
   c. TV should not change to reflect the real world.
   d. the stereotypes seen on TV sitcoms are the result of a conspiracy by a few powerful producers to manipulate social attitudes.

8. The author implies that
   a. commercials are more realistic than TV shows.
   b. people who watch a lot of TV are more gullible than other people.
   c. we lose our ability to think rationally when we watch too much TV.
   d. TV producers believe the biased views shown in their TV programs.

9. Gerbner believes that
   a. people who watch TV more often are less objective about reality than other people.
   b. internal policing by the networks will quickly result in programming changes.
   c. pay TV will present a better level of TV material.
   d. future programs about minorities will reflect the new social conscience.

10. The author implies that people who watch a lot of TV are
   a. more informed about world events than moderate viewers.
   b. more prejudiced than moderate viewers.
   c. less prejudiced than moderate viewers.
   d. less frightened of being victims of violent crimes than moderate viewers.

CRITICAL THINKING QUESTIONS

1. The Annenberg research based its study on the amount of TV a person watched. What circumstances in the life of the viewer could cause him or her to watch more TV than other viewers do? What effect could these circumstances have on the results of the research?

2. The Annenberg investigators found that people who watch TV frequently "eat more, drink more, exercise less, and possess an almost mystical faith in the curative powers of medical science." There are two possible explanations for this. What are they?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **mundane** (171)
   a. ordinary
   b. unusual
   c. frightening
   d. extensive

2. **propensity** (173)
   a. lack
   b. tendency
   c. excessive amount
   d. attractiveness

3. **demographic** (174)
   a. statistically described
   b. randomly chosen
   c. violence oriented
   d. well educated

4. **mendacious** (176)
   a. likable
   b. lying
   c. honest
   d. quick-thinking

5. **conundrum** (176)
   a. solution
   b. story
   c. puzzle
   d. lie

UNIT II: TEXTBOOK READING

Reading for Study

One reason people often have trouble remembering textbook information for tests is that they are reading the material the wrong way. If your purpose is to thoroughly comprehend and remember complex information, you cannot use the same reading techniques that you would use to read a popular magazine for relaxation. Special techniques for study reading must be used. Four such techniques are described below: SQ3R, outlining, mapping, and summarizing. All four techniques have one major feature in common: They all require you to select what you want to remember. This selection serves two purposes. First, it limits the amount you will have to memorize to what is really essential. Second, it prevents the aimless reading and lack of concentration that students complain of when they say they have "read" five pages and have no idea what was written on them.

SQ3R

SQ3R is especially useful as a study method in courses that require you to memorize a lot of detail, as many science courses do, for example. Here is an article that describes the method.

USE SQ3R*

Kenneth L. Higbee

SQ3R is a classic, widely recommended study method. . . .

SQ3R consists of five steps: Survey, Question, Read, Recite, Review. SQ3R benefits both good and poor students. The following is a brief description of the SQ3R method, based on more extensive discussions in books on study habits of Francis Robinson and by Clifford Morgan and James Deese.[1]

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*From the book *Your Memory* by Kenneth Higbee. Copyright © 1977 by Prentice-Hall, Inc. Published by Prentice-Hall, Inc., Englewood Cliffs, N.J. 07632. Reprinted in Janet Maker and Minnette Lenier, *College Reading, Book 2.* Belmont, CA: Wadsworth Publishing Co., 1982, pp. 87–89.

Survey

To survey a book, read the preface, table of contents, and chapter summaries. To survey a chapter, study the outline and skim the chapter, especially the headings, pictures, and graphs. Surveying consists of getting an overview of what the book or chapter is about, and should not take more than a few minutes. Many books have a summary at the end of each chapter; reading this summary *before* you read the chapter may also help you get an overview. The overview is somewhat like looking at a map before taking a trip, or at a picture of the finished product before starting a jigsaw puzzle. Surveying gives a framework within which to place the parts as you learn them, which in turn speeds up your reading time by allowing you to comprehend the parts more rapidly.

Memory for reading material can be increased significantly merely by giving the reader a short title reflecting the main idea of the material.[2] The reason authors of textbooks organize their material under different chapters and headings is to tell the readers the main idea of each chapter and section, how the material is put together, and how the topics relate to each other. If you do not use the headings you are failing to take advantage of an important source for learning the material.

The same holds true for pictures and graphs. The reason pictures are included in a textbook is not to take up space, to make the book thicker, or to give the reader something to look at to break up the monotony of reading. Rather, including pictures that illustrate material in the text has been found in a number of studies to increase learning and memory for the text material.[3]

Question

Skim again, asking yourself questions based on the headings, so you will know some things to look for when reading. Several studies have found that inserting written questions before, within, or after text material helps in learning and remembering the material; since most material you read does not have questions inserted, you may benefit by asking your own as you read.[4] Questions can maintain interest, foster active involvement in learning, and give a purpose to your reading, all of which help you learn the material. Also, some textbooks provide review questions at the end of the chapter; you might try reading them *before* reading the chapter so you will know what to look for as you read the chapter.

Read

Read the chapter without taking notes. Answer the questions you have asked. Read everything. Sometimes tables, charts, and graphs convey more information than the text does. Note that this is the *third* step in SQ3R; for most students it is the *first* step in studying. In fact, for some students it is the only step—some students think that when they have run their eyes over the textbook they have studied it. The characteristic strategy of freshmen who flunk out of college is that they read a chapter and underline, then in studying for a test they review the underlined parts;[5] one problem with this approach is that you usually do not know what is important, or what relates to what, the first time you read a chapter. Thus, when you review the underlined parts you may miss much of what is important.

Underlining while you are reading material for the first time also has other problems. It is easy to do, so most students underline too much; this results in their reviewing pages that have heavily marked not only the important points but also repeated and conflicting points. Another problem with underlining the first time through is that some students may develop the habit of reading to *mark* important points rather than reading to *understand* and *remember* the points; thus, a student may underline an italicized sentence and continue reading without having even read the italicized sentence! To use underlining properly, you should wait until reaching the end of a section before underlining, think about what the important points were, then underline only the key phrases. Underlining the wrong things may actually *interfere* with learning.[6]

Recite

. . . Reread, asking yourself questions about the headings and italicized words, and answering the questions as much as you can. This can be done after each section or after each chapter, depending on their length. How much of your study time should you spend reciting? For most textbooks about half of your study time should be spent reciting. You may want to spend more of your study time reciting for disconnected, meaningless material such as lists of rules and formulas; but somewhat less for storylike, connected material.

Review

Survey again, reviewing what you could recite and noting what you could not. Question yourself again. Like the Survey, the Review should take only a few minutes. . . . It takes fewer trials to relearn old material . . . than to learn new material. Thus it pays to review the material occasionally to refresh your memory so that you will have to spend less time going over the material for the final exam. The best times to review are: (1) during study, by reciting after each major section, (2) immediately after studying, and (3) just before the exam. A review immediately after studying helps consolidate the material in your memory, and a later review helps in relearning forgotten material. Having one review immediately after learning and one a week later has been found to be more effective than only one review, or two reviews immediately after learning, or two reviews a week later.[7]

SQ3R has been found to increase rate of reading, level of comprehension, and performance on examinations. In addition, the principles of SQ3R can be used not only for textbooks but also for such tasks as outside reading assignments, English literature, and charts, tables, maps, and drawings. . . .[8]

Reference Notes

1. Clifford T. Morgan and James Deese, *How to Study,* 2nd ed. (New York: McGraw-Hill, 1969). Francis P. Robinson, *Effective Study*, 4th ed. (New York: Harper & Row, 1970).
2. D. J. Dooling and R. Lachman, "Effects of Comprehension on Retention of Prose," *Journal of Experimental Psychology* 88(1971).
3. F. Goldberg, "Effects of Imagery on Learning Incidental Material in the Classroom," *Journal of Educational Psychology* 66(1974):233–237; A. M. Lesgold, J. R. Levin, J. Shimron, and J. Gottman, "Pictures and Young Children's Learning From Oral Prose," *Journal of Educational Psychology* 67(1975):636–642; J. Peeck, "Retention of Pictorial and Verbal Content for the Text With Illustrations," *Journal of Educational Psychology* 66(1974):880–888; W. D. Rohwer Jr., and R. D. Matz, "Improving Aural Comprehension in White and Black Children: Pictures Versus Print," *Journal of Experimental Child Psychology* 19(1975):23–26.
4. On the value of inserting questions, see, for example, R. C. Anderson and W. B. Biddle, "On Asking People Questions about What They Are Reading," in *Psychology of Learning and Motivation*, ed. Gordon H. Bower (New York: Academic Press, 1975), pp. 9, 90–132; and J. Snowman and D. J. Cunningham, "A Comparison of Pictorial and Written Adjunct Aids in Learning From Text," *Journal of Educational Psychology* 67 (1975):307–311. On the value of asking your own questions, see L. T. Frase and B. J. Schwartz, "Effect of Question Production and Answering on Prose Recall," *Journal of Educational Psychology* 67(1975):628–635.
5. Wayne H. Bartz, *Memory* (Dubuque, Iowa: William C. Brown, 1968), pp. 30–31.
6. J. P. Rickards and G. J. August, "Generative Underlining Strategies in Prose Recall," *Journal of Educational Psychology* 67(1975):860–865.
7. L. R. Gay, "Temporal Position Reviews and Its Effect on the Retention of Mathematical Rules," *Journal of Educational Psychology* 64(1973):171–182.
8. See Robinson, *Effective Study.*

Now, using the principles in the article, go back and underline its main ideas and key details. Underline only what you believe might be on an exam.

The most efficient way of preparing for the Recite and Review steps is to write notes in the textbook margain to test your memory of what you underlined. You should be able to convert your notes into questions; therefore a summary is not appropriate. Here is the SQ3R article with sample underlining and marginal notes. Notice that the marginal notes do not summarize the five steps; they merely provide a basis for testing your memory of them.

SQ3R is a classic, widely recommended study method. . . .

5 steps
in SQ3R

SQ3R consists of five steps: Survey, Question, Read, Recite, Review. SQ3R benefits both good and poor students. The following is a brief description of the SQ3R method, based on more extensive discussions in books on study habits by Francis Robinson and by Clifford Morgan and James Deese.[1]

Survey

To survey a book, read the preface, table of contents, and chapter summaries. To survey a chapter, study the outline and skim the chapter, especially the headings, pictures, and graphs. Surveying consists of getting an overview of what the book or chapter is about, and should not take more than a few minutes. Many books have a summary at the end of each chapter; reading this summary *before* you read the chapter may also help you get an overview. The overview is somewhat like looking at a map before taking a trip, or at a picture of the finished product before starting a jigsaw puzzle. Surveying gives a framework within which to place the parts as you learn them, which in turn speeds up your reading time by allowing you to comprehend the parts more rapidly.

3 things to survey in a book

2 things to survey in a chapter

advantages of survey

Memory for reading material can be increased significantly merely by giving the reader a short title reflecting the main idea of the material.[2] The reason authors of textbooks organize their material under different chapters and headings is to tell the readers the main idea of each chapter and section, how the material is put together, and how the topics relate to each other. If you do not use the headings you are failing to take advantage of an important source for learning the material.

reasons for using readings

The same holds true for pictures and graphs. The reason pictures are included in a textbook is not to take up space, to make the book thicker, or to give the reader something to look at to break up the monotony of reading. Rather, including pictures that illustrate material in the text has been found in a number of studies to increase learning and memory for the text material.[3]

Question

Skim again, asking yourself questions based on the headings, so you will know some things to look for when reading. Several studies have found that inserting written questions before, within, or after text material helps in learning and remembering the material; since most material you read does not have questions inserted, you may benefit by asking your own as you read.[4] Questions can maintain interest, foster active involvement in learning, and give a purpose to your reading, all of which help you learn the material. Also, some textbooks provide review questions at the end of the chapter; you might try reading them *before* reading the chapter so you will know what to look for as you read the chapter.

how and why to use questions

Read

how to read

Read the chapter without taking notes. Answer the questions you have asked. Read everything. Sometimes tables, charts, and graphs convey more information than the text does. Note that this is the *third* step in SQ3R; for most students it is the *first* step in studying. In fact, for some students it is the only step—some students think that when they have run their eyes over the textbook they have studied it. The characteristic strategy of freshmen who flunk out of college is that they read a chapter and underline, then in studying for a test they review the underlined parts;[5] one problem with this approach is that you usually do not know what is important, or what relates to what, the first time you read a chapter. Thus, when you review the underlined parts you may miss much of what is important.

how and when to underline

Underlining while you are reading material for the first time also has other problems. It is easy to do, so most students underline too much; this results in their reviewing pages that have heavily marked not only the important points but also repeated and conflicting points. Another problem with underlining the first time through is that some students may develop the habit of reading to *mark* important points rather than reading to *understand* and *remember* the points; thus, a student may underline an italicized sentence and continue reading without having even read the italicized sentence! To use underlining properly, you should wait until reaching the end of a section before underlining, think about what the important points were, then underline only the key phrases. Underlining the wrong things may actually *interfere* with learning.[6]

Recite

how and when to recite

. . . Reread, asking yourself questions about the headings and italicized words, and answering the questions as much as you can. This can be done after each section or after each chapter, depending on their length. How much of your study time should you spend reciting? For most textbooks about half of your study time should be spent reciting. You may want to spend more of your study time reciting for disconnected, meaningless material such as lists of rules and formulas; but somewhat less for storylike, connected material.

Review

Survey again, reviewing what you could recite and noting what you could not. Question yourself again. Like the Survey, the Review should take only a few minutes. . . . It takes fewer trials to relearn old material . . . than to learn new material. Thus it pays to review the material occasionally to refresh your memory so that you will have to spend less time going over the material for the final exam. The best times to review are: (1) during study, by reciting after each major section, (2) immediately after studying, and (3) just before the exam. A review immediately after studying helps consolidate the material in your memory, and a later review helps in relearning forgotten material. Having one review immediately after learning and one a week later has been found to be more effective than only one review, or two reviews immediately after learning, or two reviews a week later.[7]

how and
when to
review

SQ3R has been found to increase rate of reading, level of comprehension, and performance on examinations. In addition, the principles of SQ3R can be used not only for textbooks but also for such tasks as outside reading assignments, English literature, and charts, tables, maps, and drawings.[8]

3 results
of SQ3R
and other
uses

OUTLINING

Many people don't like to mark up their textbooks, so they may wish to use outlining instead of SQ3R. Outlining means organizing ideas in a visual form so that you can easily see the relationships between them. This makes the ideas easier to remember. Since virtually all textbook authors write from an outline, nearly all textbooks are very easy to outline. Compared to SQ3R, outlining is slower, but it can also be effective. Here is an outline of the article on SQ3R.

I. Steps
  A. Survey
    1. Book
      a. Preface
      b. Table of contents
      c. Chapter summaries
    2. Chapter
      a. Outline
      b. Skim
        (1) Headings
        (2) Pictures and graphs
      c. Summary

- B. Question
    - 1. Based on headings
    - 2. Research/effects
    - 3. Review questions first
- C. Read
    - 1. No notes on first reading
    - 2. Answer questions
    - 3. Underline key phrases
- D. Recite
    - 1. After each section or chapter
    - 2. About half of study time
- E. Review
    - 1. Survey again
    - 2. Question again
    - 3. Review occasionally
        - a. During study
        - b. Immediately after studying
        - c. Just before the exam
        - d. One week after learning

II. Results
- A. Increase rate
- B. Increase comprehension
- C. Test performance

III. Uses
- A. Textbooks
- B. Outside reading assignments
- C. Literature
- D. Graphics

MAPPING

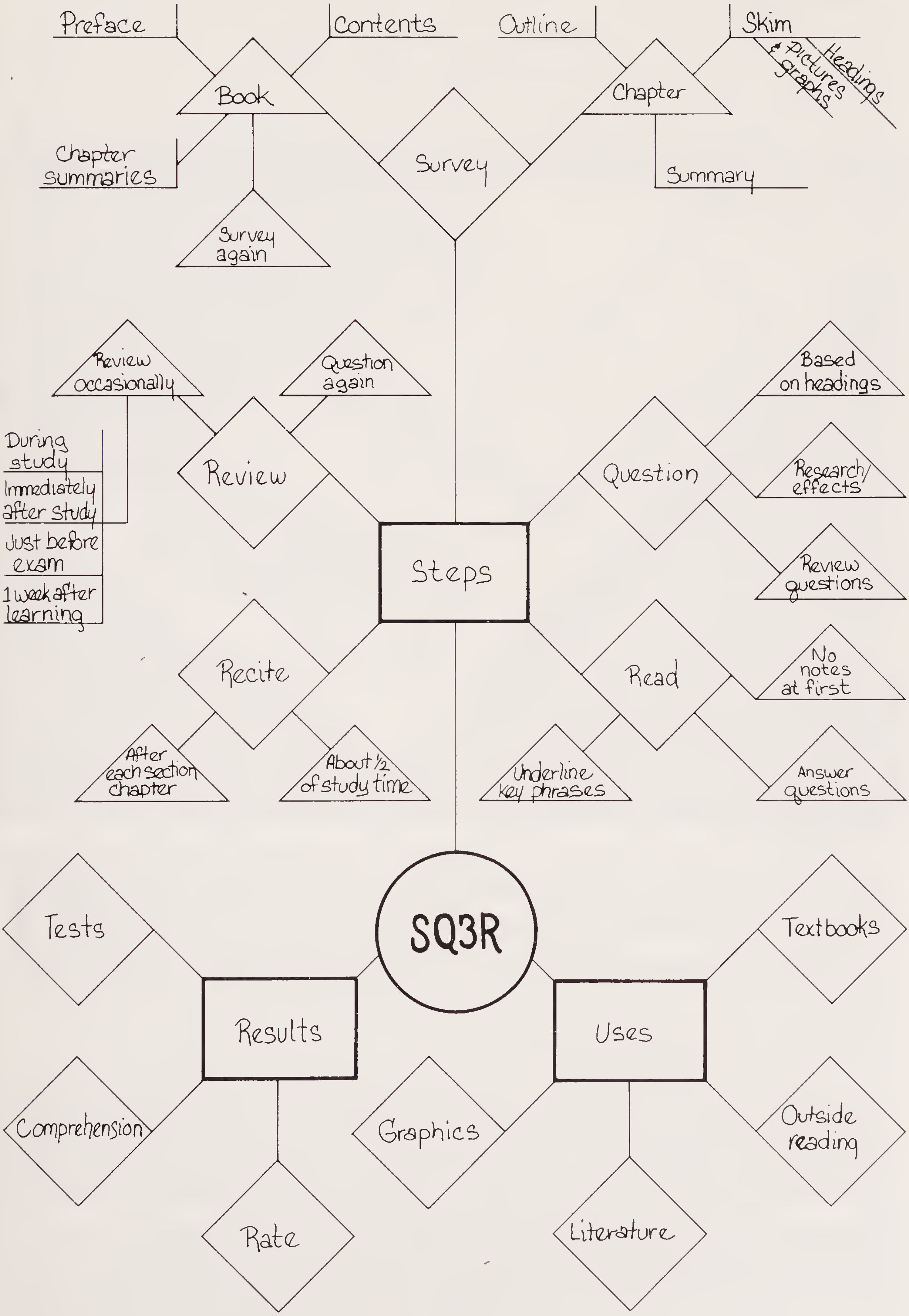
Mapping is a method of notemaking that some people prefer to outlining. Its supporters claim that it takes visual organization one step further than outlining does, providing a greater foothold for memory.

You should first survey the chapter as in SQ3R, then identify the main idea or topic. (This is often the title of the chapter.) This topic should be written in the center of a piece of paper, with a shape, such as a circle, drawn around it.

The second step in making a study map can also be accomplished after the chapter survey. This step involves identifying the principal subdivisions of the topic. In a textbook, these usually correspond to chapter headings. There should be no more than about seven of these, or the map will become too complicated. These secondary topics should be drawn on the map, working outward from the main topic in the center.

Before filling in the smaller details on the map, you should read the chapter as you would if you were using SQ3R. Then you should fill in the minor details, still working outward.

As an example, here is a map of the article on SQ3R:



The final step is to memorize the map. Since nearly all maps *look* different, especially if you put different ideas in different colors, they are said to be easier to memorize than outlines, which tend to look alike.

SUMMARIZING

Summarizing allows you to put ideas "in a nutshell," making them easier to memorize. It is most useful when you have to learn only the main ideas rather than a lot of detail. You can easily summarize by writing out the same topics you would have used for marginal notes in SQ3R or as topics on an outline or a map. Here is a summary of the article on SQ3R.

SQ3R

SQ3R is a study reading technique designed for textbooks. It consists of five steps: Survey, Question, Read, Recite, and Review. The Survey step can be performed on a whole book by reading the preface, the table of contents, and the chapter summaries. It can be performed on a chapter by reading the chapter outline, skimming the chapter, paying special attention to headings and pictures and graphs, and reading the chapter summary.

The second step is to make up questions based on the chapter headings. Research indicates that doing this increases one's interest and involvement. If there are review questions at the end of the chapter, they should be read now.

The third step is to read the chapter without taking any notes or underlining. Answer the questions you asked in the second step, and then underline key phrases only.

The fourth step, Recite, involves rereading and answering questions you ask yourself. You should spend about half of your study time reciting.

The final step, Review, requires you to survey and question again. This should be done during study, immediately after study, and just before the exam. A review one week after study is also helpful.

SQ3R increases reading rate, comprehension, and performance on tests. It can be used not only on textbooks but on outside reading, literature, and graphic material.

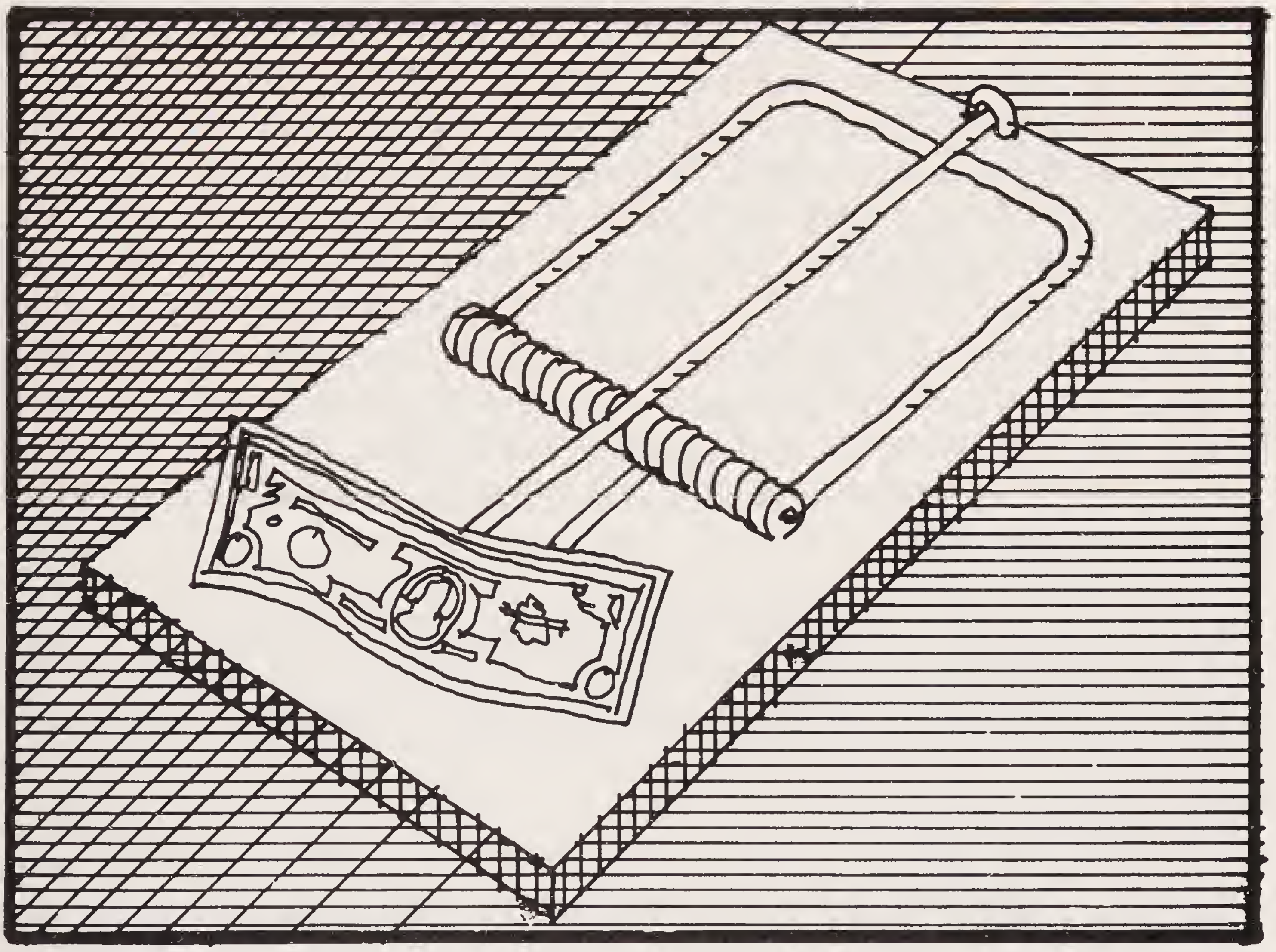
All four study reading techniques require you to select what is important to learn, write it down in some form, and then memorize it. This cannot possibly be accomplished in the same amount of time that you would read an equal number of pages in a detective novel for pleasure. If your goal is high comprehension and retention, you must expect a decrease in speed. Study reading will never be as rapid as some other types of reading will. However, practice of study reading techniques will make you a faster study reader in the same way that practice of rapid reading techniques will increase your rapid reading rate.

Read this article. Write your starting time here: __________.

25

Some Businesses Take Advantage of the Unwary

J. Norman Swaton



Business, as pointed out earlier, is an essential part of the American economy. Greed, apparently, is also an inescapable part of human nature, and this unfortunate combination can work against you in your efforts to accumulate investment capital just as much as inflation does.

There's nothing subversive about business going after discretionary funds. In fact, it's healthy and makes for progress in many ways. You, as consumer, are supposed to learn to play the game and exercise your free will to buy only those things that fit into your life plan. That part's simple enough. What muddies the picture are the countless companies that prey on the lonely, insecure, and immature (or at least

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From J. Norman Swaton, *Personal Finance: Getting Along and Getting Ahead*, pp. 42–45. © 1981 by Litton Educational Publishing, Inc. Reprinted by permission of Kent Publishing Company, 20 Park Plaza, Boston, Mass. 02116, a division of Wadsworth, Inc.

unsophisticated) with advertising that effectively promises to fulfill needs and desires that can in no way be met through use of the product involved. The dishonesty of such practices is probably somewhat a matter of definition, and if the fantasy of satisfaction brings temporary pleasure at relatively little expense, there's probably no reason to mount a case against it. Women are going to spend money for *some* kind of pantyhose and whether it's the kind Joe Namath wears or just some unknown model is really a matter of little concern. Similarly, the clothing budget isn't affected too much if the dress shirts bought this month are the kind women on TV can't resist tearing from your body or plain old Sears page 395.

Actually, the last two statements are minor lies, as we'll see in a couple of chapters, but they serve here to make the point that some common business practices are less harmful than others. Puffery (flattering publicity or extravagant recommendation, according to the dictionary) is one thing, and has become an expected part of the marketing approach. But beyond this are still more deceitful and fraudulent practices that take billions of dollars out of the economy each year by taking advantage of unsophisticated people who believe the world is as honest as they are. We're going to look at some of the most common of these here because some of them might be unfamiliar to you. Knowing about them can make a considerable difference in how soon you reach your financial goals.

SOME COMMON DECEPTIONS TO WATCH FOR

The following are practices that usually can't be prosecuted under the law but that can take your dollars in sneaky, underhanded ways.

Bait and Switch Ads

These will probably be with us forever. "Singer Portable Sewing Machine—$29.95!" says the little ad in the classifieds or display section of the paper. The price is so great you run right down. If you call ahead, you'll be told they only have a few left so you'd better hurry because they can't hold them at that price. When you get there, of course, it's a rebuilt machine with no guarantee, which the salesperson either won't even bring out to show you or puts down so much you're ashamed you asked about it. What they do have, for a little more money, is the Dynamite Superfine free-arm machine that zigs, zags, and butters your toast.

Vacuum cleaners, refrigerators, television sets, freezers, meat, carpeting, even eyeglasses are sold this way. And the stores aren't always fly-by-night operations, either. Some of the most prestigious names in the department store field resort to the tactic. Some of the switches are so subtle you believe you did it yourself and actually feel pretty smart about it. The harm is that you are tricked into overspending—even if you receive value, which is usually not the case—and your budget is messed up for some time to come. Remember that whatever you spend in excess of what you hoped to spend comes right out of your investment capital and sets your plan back a corresponding length of time. If a merchant or salesperson you've invited to your home tries it on you, you're well advised to terminate the interview immediately and shop elsewhere.

False List Prices

This technique, which allows unjustified advertising claims of great discounts, is a common way of business in some lines. The hi-fi industry in the fifties became so addicted to this practice that national merchandising companies included the false list prices in their catalogs. The discounted "audiophile net" price was in fact the list price and it was virtually impossible to find any store that sold for either the false list or truly discounted prices. Competition and consumer education eventually eliminated this particular practice, and today examples of the phony list price are usually confined to individual brands and stores, although from time to time the "sticker price" on new automobiles becomes meaningless. Your best defense against this practice is careful shopping and comparison of prices at several dealers.

Phony Contest Awards

These may start out as a phone call advising you that your name has been selected as a contestant to receive a free this or that if you can answer two questions. The questions, of course, would make Groucho Marx blush. All you have to do to claim your free encyclopedia set is sign up for the reader service and the annual yearbooks. Cost? Strangely, about the same as the cost of the set with the other stuff thrown in. The same ploy works as a variation on the bait and switch: you receive a letter advising you you have won second prize or consolation prize in a contest you may or may not remember having entered (at a recent home show or county fair, for example). Your certificate is worth half or two-thirds the cost of a moderately priced sewing machine. When you try to buy it, you find there is no guarantee so you have to buy a service policy, or a cabinet, or instructions in sewing technique, all of which come free with the higher-priced, better-quality machine that zigs, zags, and butters toast.

Free Gifts

These often never appear. The gifts "have to be mailed out from our regional headquarters" or some such excuse when the salesperson arrives at your home. Whether the consumer buys or not, the free gift never quite makes it, but the family budget has been unnecessarily strained, or at least exposed to the probability of strain, through a deceptive advertising practice.

Phony Sales

This is a variation on the theme of false list prices because much, if not all, of the merchandise on sale is brought in for the event. Well-established department stores still do this, often mixing lower-priced merchandise with some legitimately marked-down goods. It's distressing to find that the sale price you paid for something is really more than its normal retail price, but it happens every day in stores all over the country. Refinements and variations include such practices as advertising a sale price on a 17-inch television set and showing a picture of a deluxe 25-inch. Another is the "going out for business" sale. The merchant will claim mere cuteness if brought to task for this deceitful substitution of words. More subtle still is the use of price comparisons such as "$20 value" in the obvious hope that the reader will take it to mean "$20 regular price," which, of course, it isn't.

Wholesale to the Public

This claim is by definition impossible. Wholesale is to retailers and retail is to the public. Still, millions of Americans daily buy from such stores in the belief they are saving money. Only when the price of an item is well established can such a claim be put to the test. Usually it fails, because the item can be bought from normal channels as cheaply and often with service that isn't available through the "wholesaler." A variation of this practice is the way some major manufacturers make a well-established product line of quality, and a very similar-appearing product line (often with a confusingly similar name) for sale in discount department stores. Luggage, typewriter, and sporting goods manufacturers are particularly guilty of this near-conspiracy, which leads consumers to believe they are getting a discount when in fact the product is sold for at least normal retail prices, considering the lowered quality.

Easy Credit

This one is usually accompanied by an advertisement to the effect that the seller of some item carries his own credit so you can qualify even if you're new in town, been bankrupt, and so on. It can be the most insidious victimization of all. It's always of most appeal to those who can least afford it, and the price is *high*. This is the subject of another whole chapter but it can't be mentioned too often as a lump in the oatmeal of life.

SOME PRACTICES TO BE WARY OF

Up to now we've been talking about sharp practices that manage to stay within the law. There are also countless full-blown frauds that are perpetrated on people every day. These are more traumatic in their impact on a financial program because they usually involve larger amounts of money—often the entire savings of a family—and more often than not the service or merchandise bought is worthless if it exists at all.

Unordered Merchandise

This is one of the cheapest of the scams and probably remains so because very few people are about to lay out more than a few dollars to cover a "COD" delivery for an absent neighbor. (When the neighbor comes home, of course, it turns out that nobody ordered anything in the first place and the box is probably empty in the second place.) A variation is the delivery of actual merchandise which wasn't ordered but then becomes the subject of repeated billings and threats of court action if payment isn't made as demanded. The law is on your side in most cases, but be sure to check with a lawyer if you're in doubt.

Vanity Publications

These can be relatively inexpensive if all you have to buy is a single copy of the book in which your biography is included as an outstanding biology student of the year, state PTA president, or retail hardware clerk of the week. An entirely different story is the $5,000 it may cost to get your book of poems "published" (quotes because *publication* implies intended sale and the vanity press industry intends to print only a few copies to stroke the frustrated ego of the author). Legitimate publishers never charge an author cash for publishing a work they intend to sell for a profit. Certain minor costs may by contract be charged to a royalty account, but the author never has to put up front money.

Auto Repair

Repair frauds are particularly effective in areas of mystery, such as automatic transmissions. Thousands of cases have been documented where a $3 or $4 part is installed in an automatic transmission in half an hour, and the customer charged $300 for his own repainted transmission as a "rebuilt." Guarantees are frequently voided by trumped-up situations which either never happened or are as totally unrelated as the wrong kind of gasoline being used. One of the world's largest retailers was recently indicted by a Los Angeles County grand jury for practices in some of its auto shops that included making unneeded repairs and charging for parts not installed. Fan belts are sometimes slashed by service station attendants and then pointed out as defective. One classic case in Los Angeles involved a woman who left her Mercedes in a dealer's repair shop for a new battery and got it back weeks later with a $1,900 bill for work unauthorized by her. At this writing, the courts have just settled a $90,000 award in her favor (including punitive damages intended as a warning to the repair industry), but an appeal has been filed by the dealer. The amount of time and money this cost the owner of the car (even though the attorney took the case on a percentage of award basis) is hard to measure, but she lost her apartment, car, and job in the process. Also, presumably, her taste for expensive European motor cars; she now drives a Datsun.

Anyone who has a competent mechanic who can be trusted should count this fact among the prime blessings of life.

Mail Order Frauds

These come in all sizes. At the cheap end are such scams as chain letters, which only take small amounts of money and large amounts of hope from the victim. "Send your dollar to the name at the top of the list. Add your name to the bottom of the list. Make ten copies of this letter and mail them to friends. In two weeks your name will be at the top of the list and thousands of people will be mailing their dollar to you." So the song goes, often laced with stories of tragedy befalling those who dared "break the chain." Mathematically, of course, the chain breaks itself in a few days, but neither that nor the illegality of the letters stops them.

At the other end are land sales that can cost thousands of dollars for property that ends up being on the side of a cliff, under a swamp, or two miles from the nearest water faucet.

A variation of mail order racketeering is the industry that advertises opportunities for wealth through running a mail order business from your home. "You can make millions as I have," is the typical approach. All you have to do is buy your merchandise from the self-professed wizard, and he'll share with you the secrets that made it all happen. Along the way you find out that you'll also need a catalog, and that's another two or three thousand, plus a mailing list, which he'll rent to you at a price, and a postage bill you wouldn't believe. Before long it becomes apparent that the way he made his million in mail order was from suckers like yourself.

Similar cons involving earthworms, chinchillas, rabbits, potted palms, stuffed dates, and unstuffed envelopes have been around forever. The one thing they all have in common is that you must buy something before you can start in business and watch the profits roll in. The problem is that the market always seems to be a little soft when your crop is ready to harvest, and the contract you thought you had for the buy back of the initial investment is a little tougher than you realized.

AVOIDING THE CON

The list of frauds and deceits is almost endless. Every year local police publicize them in newspapers to warn people of the possibility of being taken, and every year people who didn't get the word are taken anyway. It's impossible to learn all the varieties of scam, because new ones are made up every day. However, you can and should try to remember a few basic commonsense principles that will let you recognize that you are being hustled, even if you don't yet know just how. For example, these three rules can save you a lot of trouble and lost time in your progress toward financial goals.

1. *Never be forced into a hasty decision.* A salesperson who tries to convince you you have to decide right now or miss out is almost certainly a hustler. If it's good tonight, it'll be good in the morning. Sleep on it and see how it looks in the daylight. If he says he can't wait, you can be sure that you should.
2. *Don't believe you're getting a special deal.* Unless, of course, you know the seller personally (sometimes not even then!). If the deal is because you've somehow been singled out to star in an advertising campaign, get the person's license number if you can and call the police. Chances are excellent he or she is trying to pick your pockets.
3. *Don't buy something expensive to save money.* There's an old story about a weary housewife who decided to pass on the freezer full of beef because ". . . we're already paying for our foreign car with what we save on gasoline, our television with what we save on movies, our washer-dryer with what we save on laundry bills, and our sewing machine with what we save on clothes. We really can't afford to save any more right now." Unless actual experience shows that you'll really save money every month—and that means your cost *including the payment* will be less—you may be saving money in the long run but perishing in the short run. Any salesperson who doesn't see it that way is not your friend, no matter what it says on his business card.

2800 words

Write your ending time here: ______________________

Subtract your starting time: ______________________

Total time: ______________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   - a. consumer education.
   - b. deceptive practices by business.
   - c. how to avoid being cheated.
   - d. what to do if you are ripped off.
2. The main idea is that
   - a. the government should have stricter consumer protection laws.
   - b. consumers who are deceived by shady business practices are immature or insecure.
   - c. there are many dishonest business practices.
   - d. it is important for consumers to recognize shady business practices.

Details

3. Puffery is
   - a. flattering publicity.
   - b. legal cheating.
   - c. an illegal business practice.
   - d. avoided by advertisers.
4. Bait and switch ads
   - a. try to get you to buy shoddy merchandise.
   - b. try to get you to buy merchandise that is more expensive than the merchandise that was advertised.
   - c. are used only by fly-by-night operations.
   - d. lie about the price of merchandise.
5. "Wholesale to the public" deceptions are
   - a. not really dishonest.
   - b. always easy to check out.
   - c. illegal.
   - d. legal.
6. Which of the following practices is illegal?
   - a. false list prices
   - b. phony contest awards
   - c. free gifts
   - d. unordered merchandise

Inferences

7. The author implies that the use of shady business practices
   a. should be stopped.
   b. would not occur under socialism.
   c. is unavoidable.
   d. is increasing.

8. If you are "baited-and-switched" but the merchandise still looks like a good buy, you should
   a. grab it.
   b. refuse it and call the police.
   c. give the store a bad check for it.
   d. go home and think about it.

9. In general, consumers should
   a. be trusting.
   b. be suspicious.
   c. be deceptive.
   d. retain a lawyer.

10. If you are offered an appliance for $200 that the store calls "a $500 value," you should
    a. check the price in other stores.
    b. buy it.
    c. refuse to do business with this store.
    d. report the store to a consumer protection agency.

ESSAY TEST QUESTIONS

1. Summarize the principles discussed in the selection for avoiding cons.

2. Describe an example, from a newspaper or magazine, of one of the deceptive business practices discussed in the article.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **subversive** (191)
   a. honorable
   b. questionable
   c. treasonable
   d. stupid

2. **discretionary** (191)
   a. illegal
   b. uncommitted
   c. monetary
   d. suitable

3. **insidious** (194)
   a. treacherous
   b. costly
   c. obvious
   d. effective

4. **perpetrated on** (194)
   a. discovered by
   b. committed on
   c. created by
   d. shown to

5. **punitive** (196)
   a. punishing
   b. reduced
   c. powerful
   d. estimated

Read this article. Write your starting time here: ________.

26

Working With Graphs

Philip Starr

ECONOMISTS OFTEN USE GRAPHS to illustrate their models. There are many different types of graphs. We will use two of the most common types in this book: functional graphs and time series graphs. Functional graphs show the effect of one variable on another. Sometimes they show opportunity cost; that is, how the decision to buy more of one thing means the loss of something else. Sometimes they show how changes in income or prices cause changes in spending. The term "functional" is taken from the vocabulary of mathematics to convey the idea that changes in one variable are "functions of" (caused by) changes in the other.

A **functional graph** is a picture of the relationship between two variables. A **variable** is simply a quantity whose numerical value is allowed to change. One variable is shown on the horizontal axis, and the other is shown on the vertical axis (Figure 1).

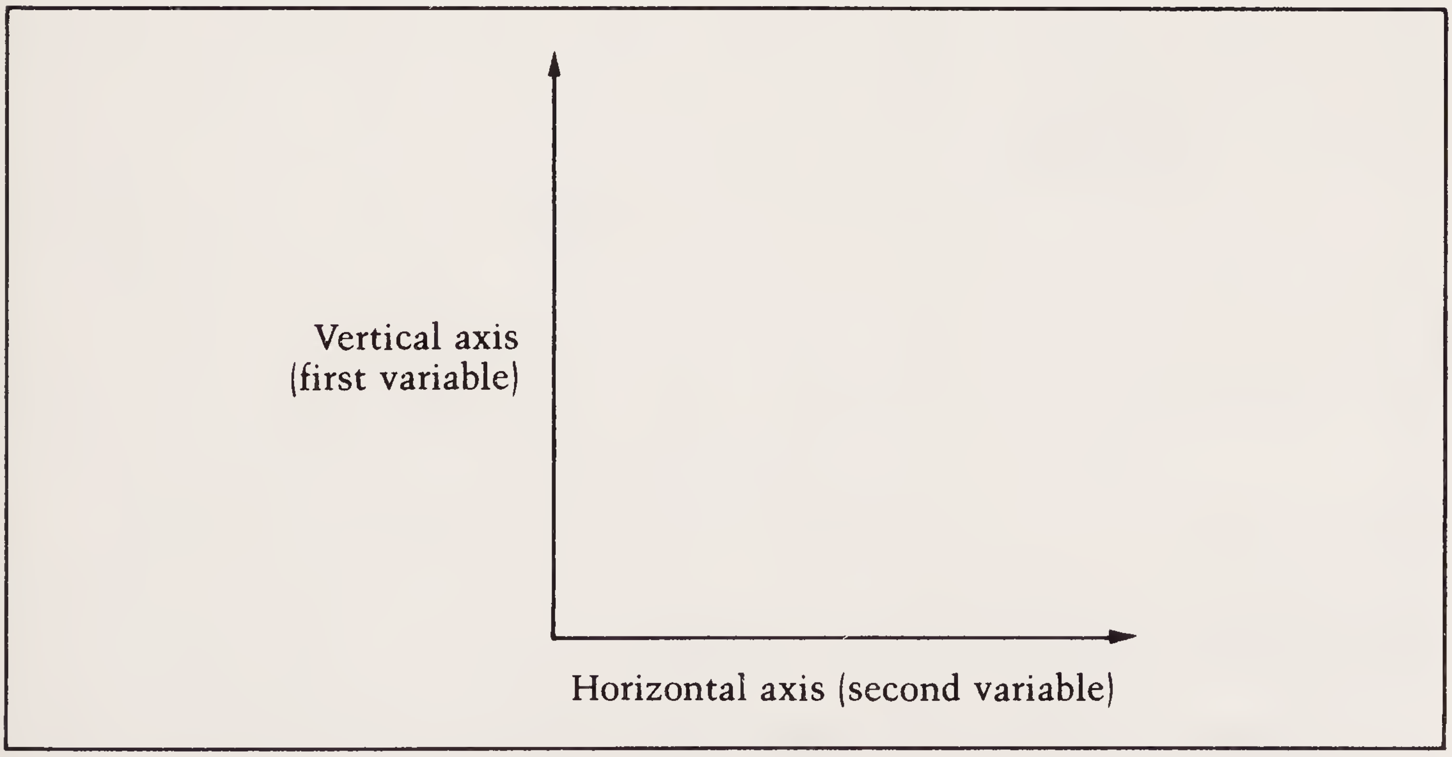

Figure 1. How economists use graphs to picture relationships between two variables.

From Economics, *Principles in Action*, Fourth Edition, by Philip Starr. © 1984 by Wadsworth, Inc. Reprinted by permission of Wadsworth Publishing Company, Belmont, California 94002.

To take a simple example, suppose you have $10 in your pocket. With it you can buy five $2 movie tickets or ten $1 six-packs of a soft drink. If you buy five movie tickets, you can buy zero six-packs. If you buy four movie tickets ($8), you will have $2 left and can buy two $1 six-packs. We can represent this relationship by a table (Table 1).

Table 1. Movie Tickets or Six-Packs?

No. of $2 movie tickets	No. of $1 six-packs	Total $ spent
5	0	$10
4	2	10
3	4	10
2	6	10
1	8	10
0	10	10

Let us graph the relationship by putting the number of movie tickets on the horizontal axis and the number of six-packs on the vertical axis (Figure 2). Note that in each case we start with 0 at the intersection of the horizontal and vertical axes (called the **origin**) and increase the numbers at equal intervals, moving right on the horizontal axis and up on the vertical axis.

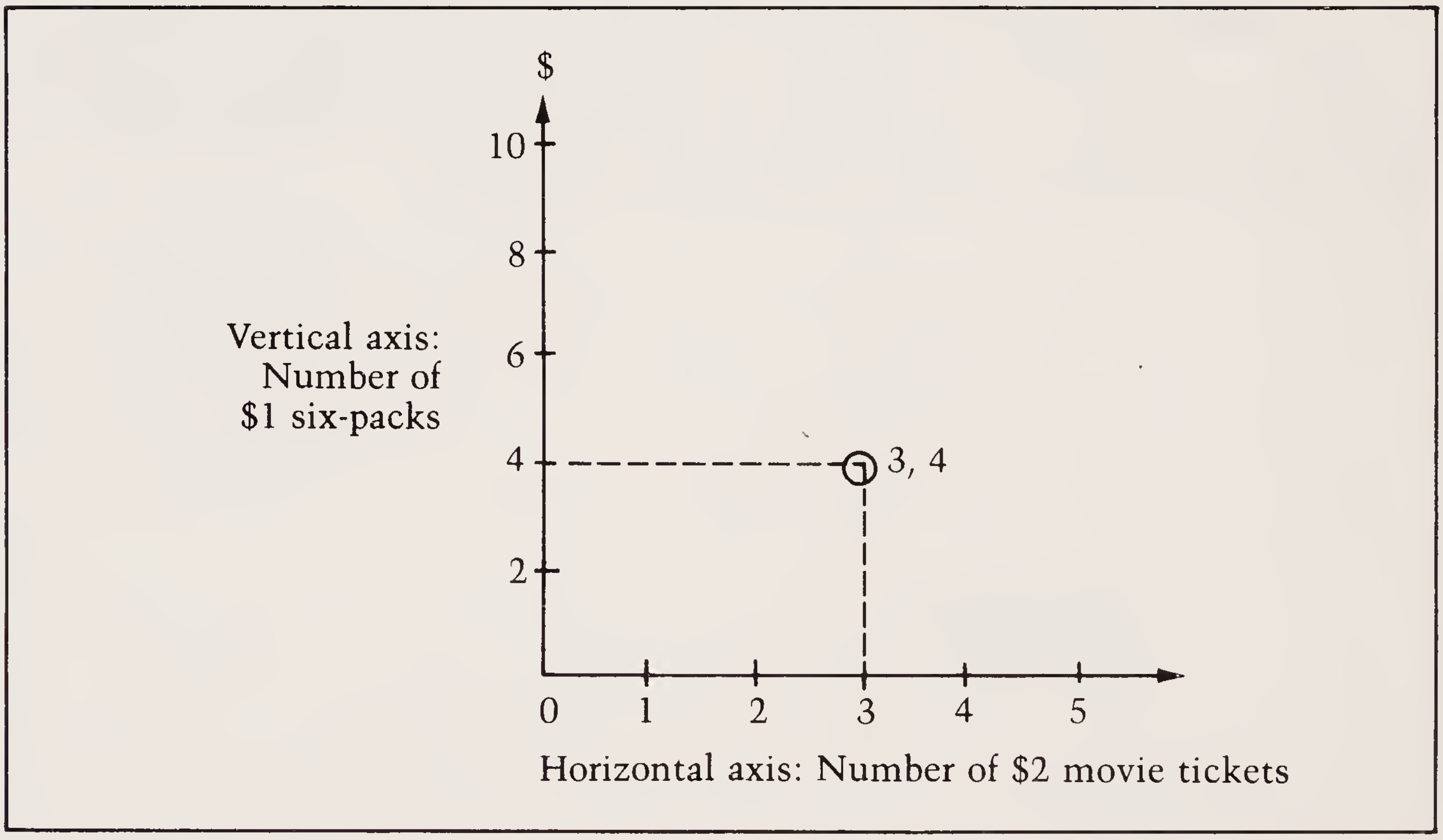

Figure 2. How to locate a point on a graph.

Suppose we want to represent the option 3 movie tickets and 4 six-packs. We read up from the horizontal axis at 3 to a point opposite 4 on the vertical axis, and we find a point that represents the combination of 4 six-packs and 3 movie tickets on the graph. If we find all of the points in the table and connect them by a line, we have a graph that

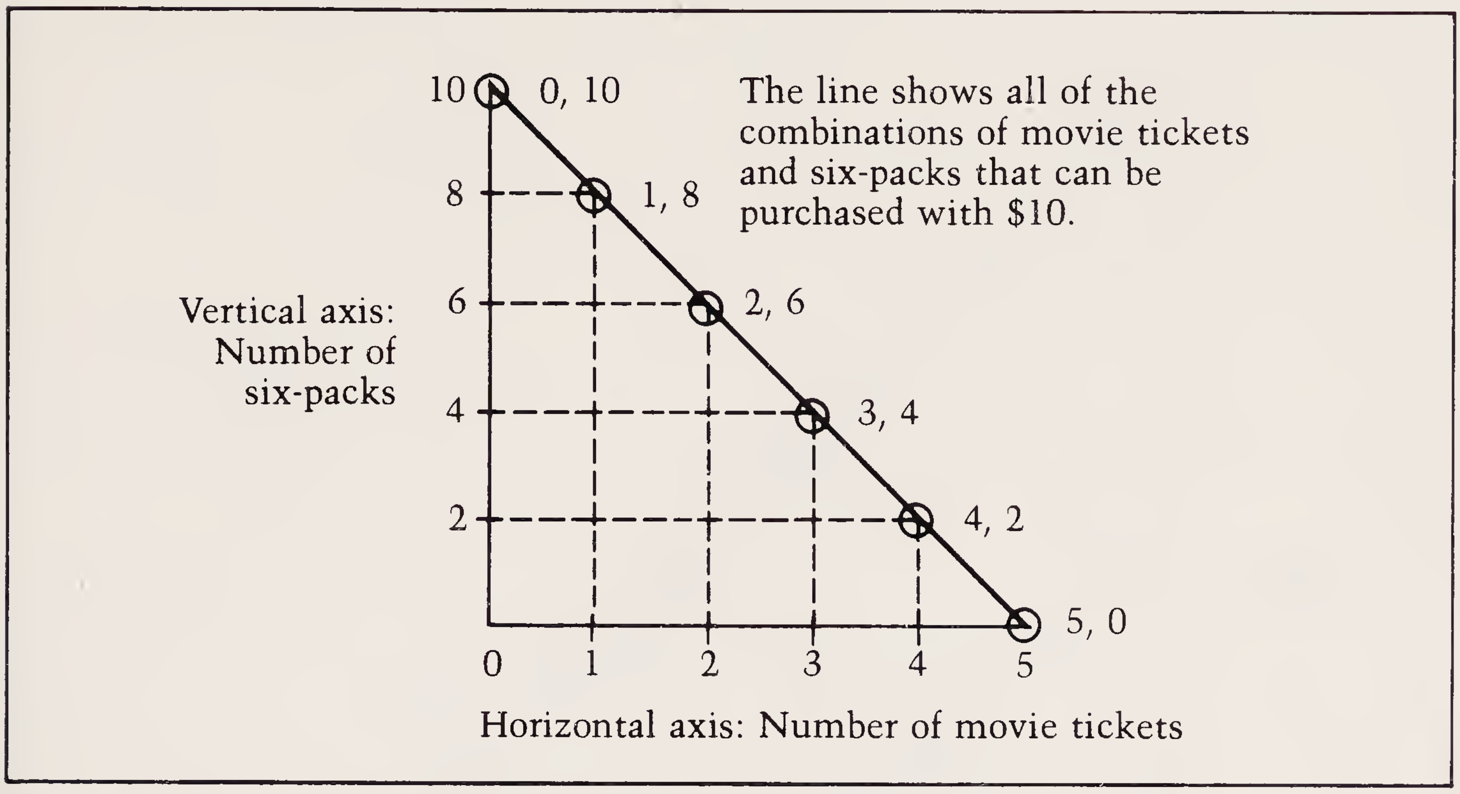

Figure 3. Example of an inverse relationship.

slopes downward from the left to the right, as shown in Figure 3. This is called an **inverse relationship**, because the more movie tickets we buy the fewer six-packs and vice versa. As one variable increases, the other decreases. (This example also illustrates opportunity cost: Each additional movie ticket costs two six-packs; each additional six-pack costs one-half of a movie ticket.)

Figure 3 shows the combination of six-packs and movie tickets that can be purchased with a fixed amount of money ($10). In this type of graph, the quantities of each item that can be purchased are determined by something that the graph does not show; that is, by a third variable. In this case, that third variable is the amount of money we have to spend. If the amount changes to more or less than $10, the line will shift to the right or left. Consequently, the line as presently shown depends on the *ceteris paribus* assumption: that nothing outside the graph (like the amount of money we have to spend) changes.

To make this point clear, let's show what happens if the amount we can spend increases from $10 to $20. Figure 4 illustrates this increase. (The line shifts to the right. Visualize the line shifting to the left if the amount we can spend becomes less than $10.)

Now let us illustrate a **direct relationship**, one in which, as one variable increases, so does the other. In this example, the two variables are spending and income. The graph is a functional one because it shows the degree to which spending is a "function" of changes in income; that is, that changes in income cause changes in spending. Suppose you are taking home $200 a week of your earnings. You spend $180 and save $20. Now suppose you get a series of $5 raises—to $205, $210, $215, and so forth. With each $5 raise, you increase your spending $4—to $184, $188, $192 . . . This time we will cut out the part of the graph from 0 to $200 on the horizontal axis and from 0 to $180 on the

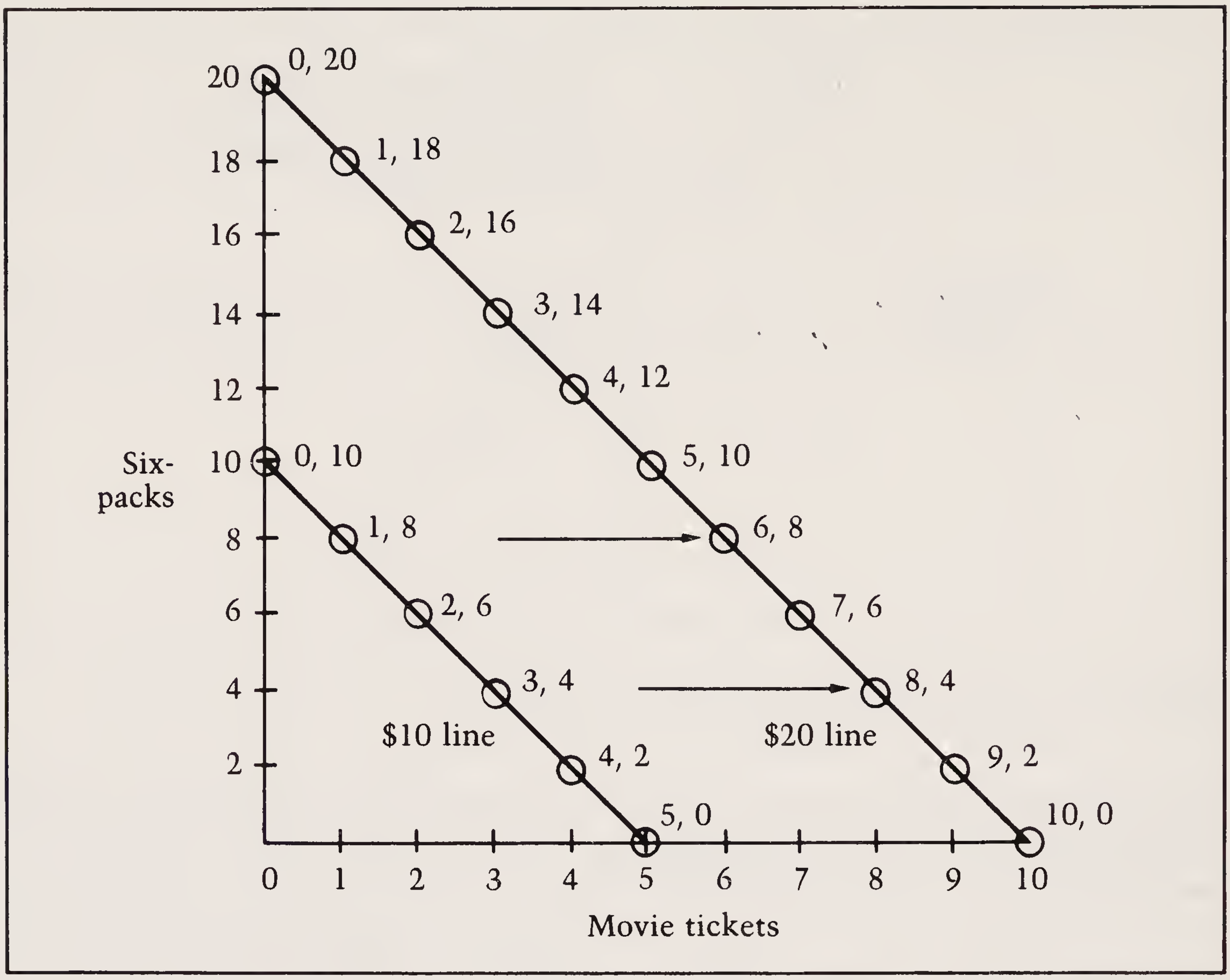

Figure 4. The combinations of six-packs that can be purchased at $10 and at $20.

vertical axis to save space; the broken lines illustrate this omission. As Figure 5 shows, the line connecting the points now slopes upward from left to right and represents a direct relationship. Graphs are handy to use because with a single line we can represent many points—$200, $180; $205, $184; and so on—and even points in between, $212.50, $190.

Even when we don't know the exact numbers, a graph is a picture showing us instantly what the relationship is between two variables. What if the graph looked as shown in Figure 6?

Functional graphs can also tell us whether one variable has a large or small effect on the other. Let's consider the response of buyers to price changes for boxes of toothpicks:

Price per box	Quantities an average family will buy every six months
10¢	2
15¢	2

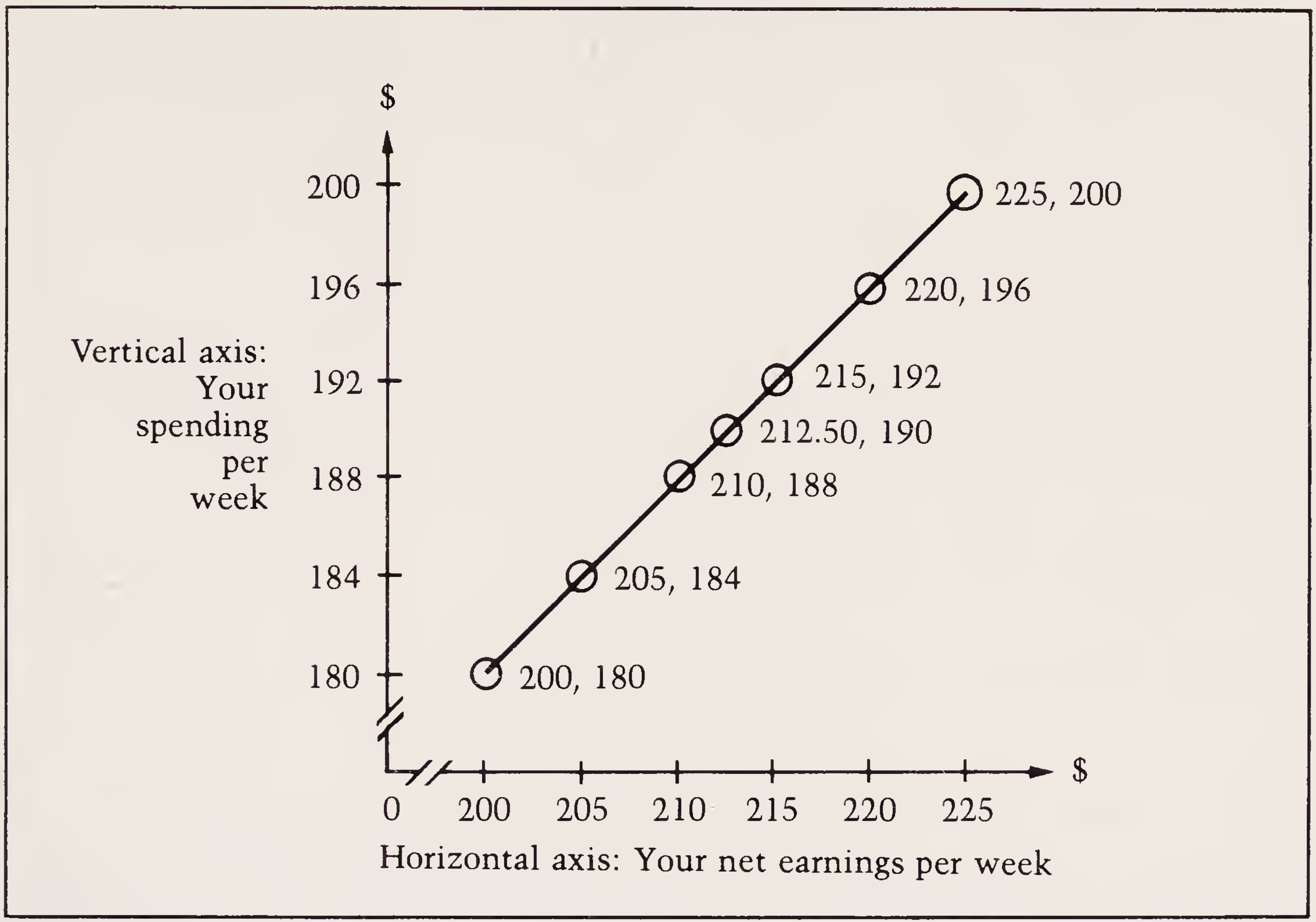

Figure 5. Example of a direct relationship.

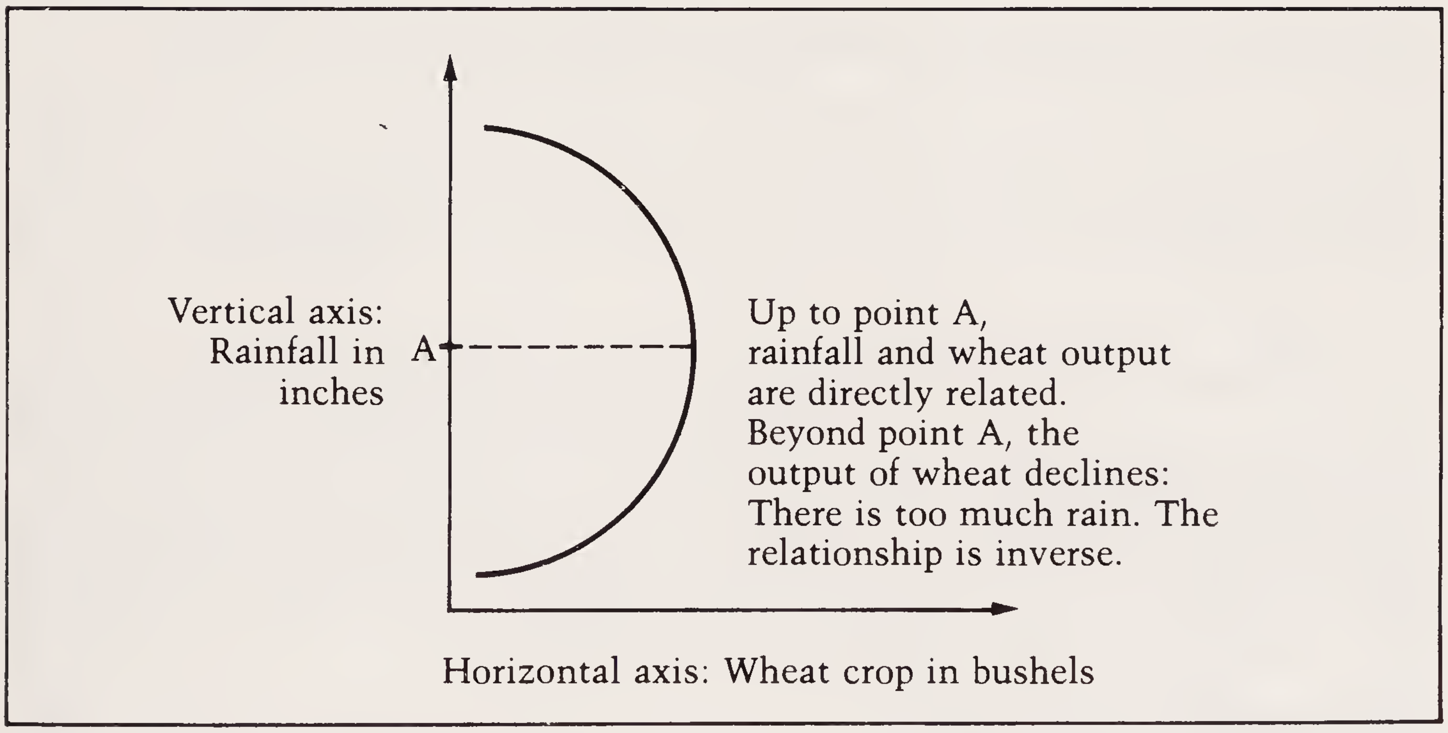

Figure 6. A changing relationship between two variables.

The graph would look like Figure 7.

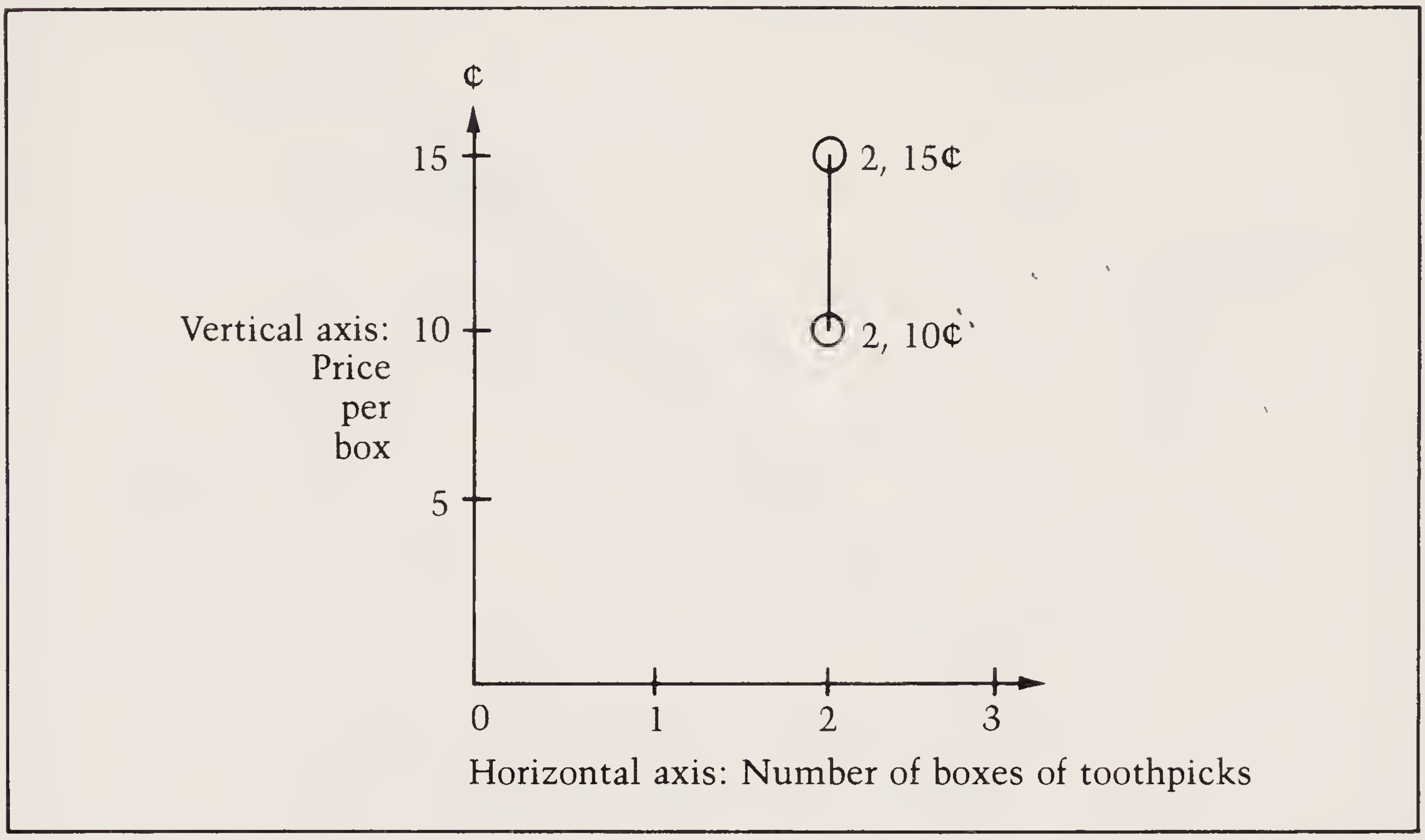

Figure 7. When the line is straight up and down, changes in the vertical-axis variable have no effect on the horizontal-axis variable.

Suppose, however, we change the quantities as follows:

Price per box	Quantities purchased
10¢	5
15¢	2

The graph would then look like Figure 8. In other words, as the line becomes more horizontal, changes in the vertical-axis variable cause larger changes in the horizontal-axis variable. The slope of the line tells us as much as the direction of the line.

TIME-SERIES GRAPHS

Time-series graphs are also two-variable graphs, but one variable is always some measure of time: weeks, months, or years. These graphs are very useful in displaying historical data to show what our performance has been in the past, to enable us to guess about the future. There are a variety of ways to show time-series information. To illustrate, we'll pretend that we want to plot the temperatures in a desert

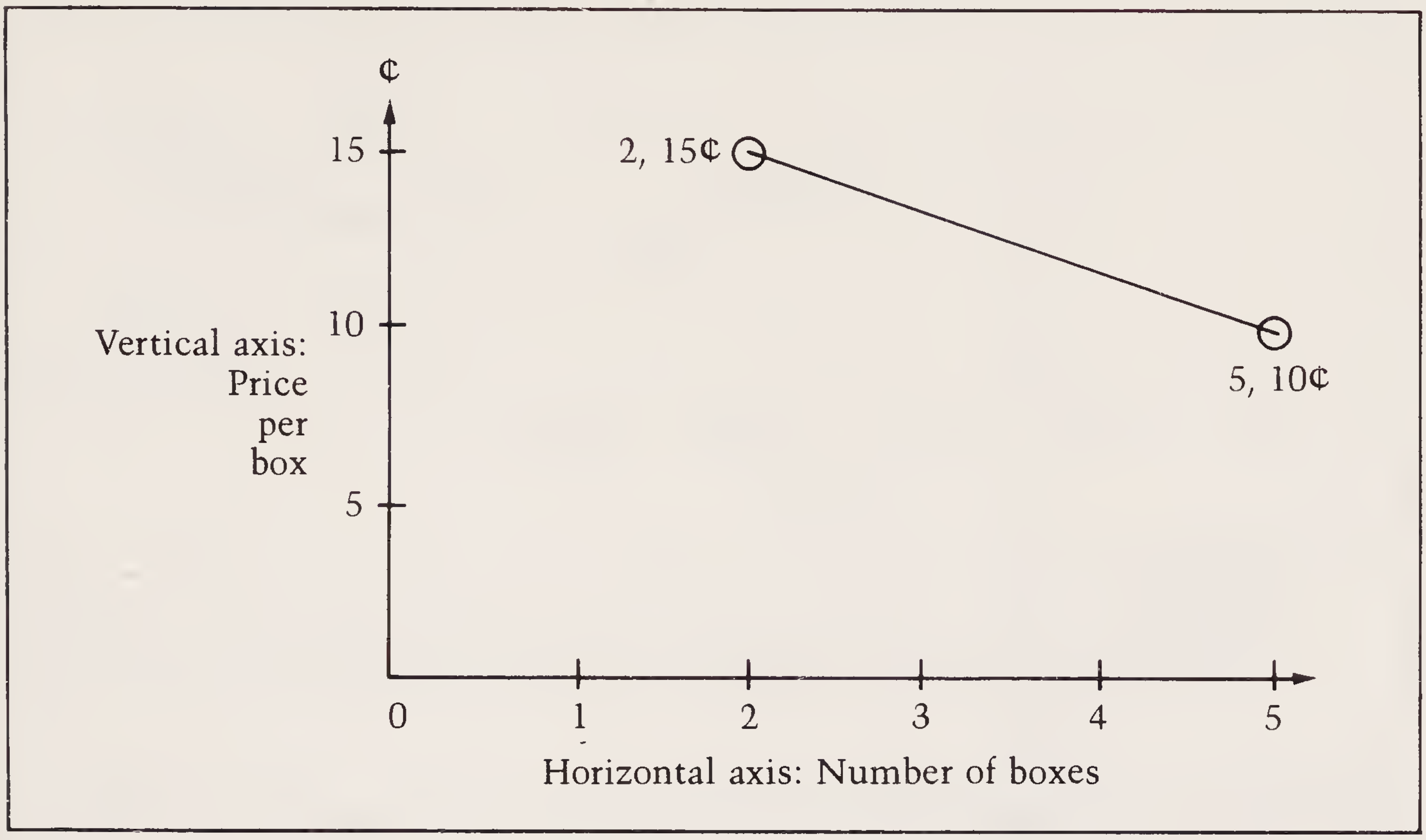

Figure 8. A small change on the vertical axis produces a large change of the horizontal axis.

community called Palsied Palms in California. (We're thinking of building a desert hideaway there.)

We find that in year X, the temperatures during the months from February through June are 105° F in February, 95° F in March, 102° F in April, 98° F in May, and 110° F in June. One way of displaying this information is shown in Table 2. This same information can also be displayed in a graph as shown in Figure 9 on the next page.

Table 2. Temperatures during the Months February to June, Year X, in Palsied Palms, California Daytime Averages*

Months	Temperatures (in degrees Fahrenheit)
February	105
March	95
April	102
May	98
June	110

*Note that in this table and the graphs that follow, we're trying hard to be precise in stating what is being measured.

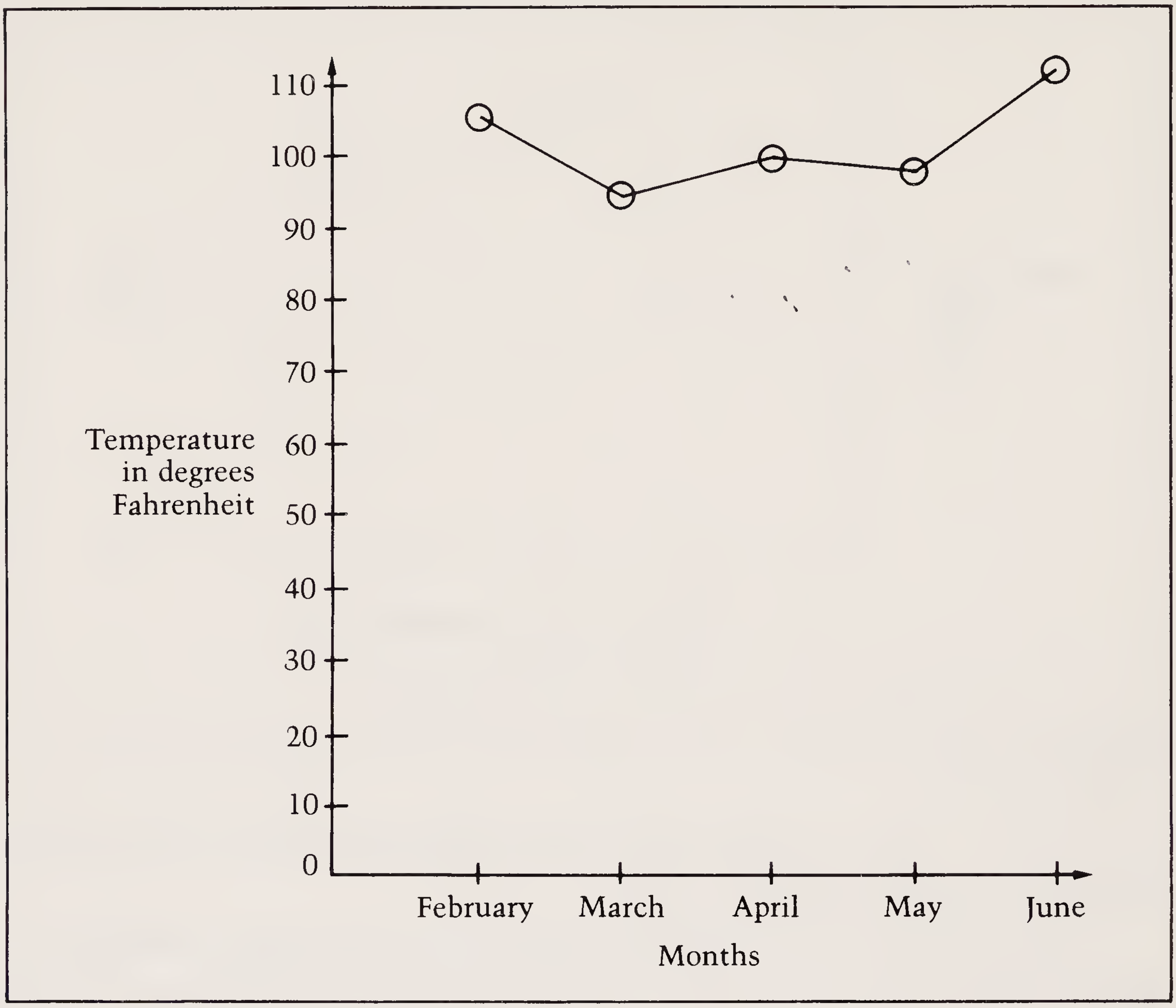

Figure 9. Temperatures during the months February to June, year X, in Palsied Palms, California; daytime averages (data based on Table 2).

As you can see, this figure takes up a great deal of unnecessary space because there are no readings below 95° F. The customary way to get rid of the unneeded space is shown in Figure 10.

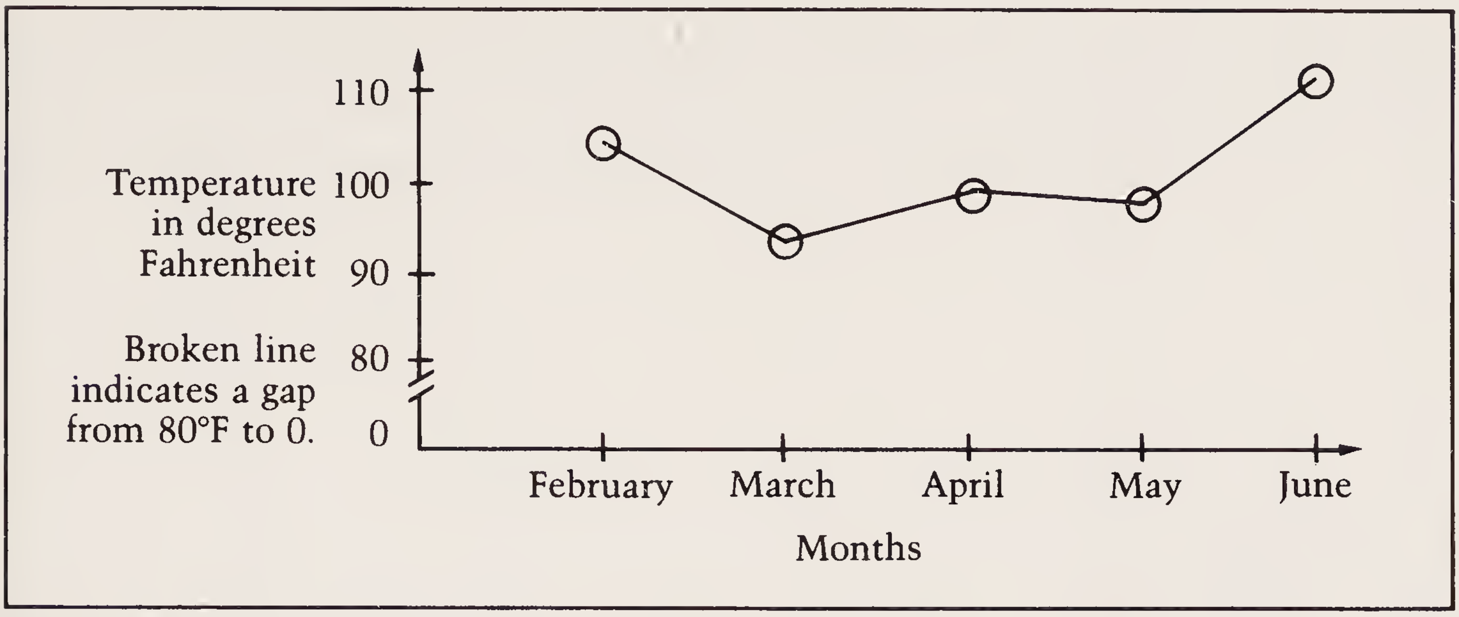

Figure 10. Temperatures during the months February to June, year X, in Palsied Palms, California; daytime averages (data based on Table 2).

Figure 10 presents the same information that Table 2 and Figure 9 do, but in much less space. A broken line on the vertical axis solves the problem, as it does in Figure 5. But, a caution is worthwhile. The broken-line trick no longer shows the relationship of the temperatures to zero. If you need to show how high all of the numbers are (how hot it really is!), avoid the broken line and take all the space you need.

Now suppose that the long-run average for each of these months is 100° F and that we want to show variations from this norm. As you can guess, we're using the number 100 to make it easy to show percentage variations. February is 5 percent above the average (norm); March is 5 percent below; April is 2 percent above; May is 2 percent below; and June is 10 percent above. We can easily show these variations as in Figure 11.

Finally, we can show the percentage increase or decrease of the temperature in each month relative to that of the previous month. (We can't do February because we don't have January figures.)

Thus, March is 9.5 percent below February (the 10-degree drop divided by the February temperature of 105 = 10 ÷ 105 = 9.5 percent). The April temperature is 7/95 or 7.4 percent above March. The May temperature is 4/102 or 3.9 percent below April. Lastly, the June temperature is 12/98 or 12.2 percent above May. Figure 12 illustrates these changes.

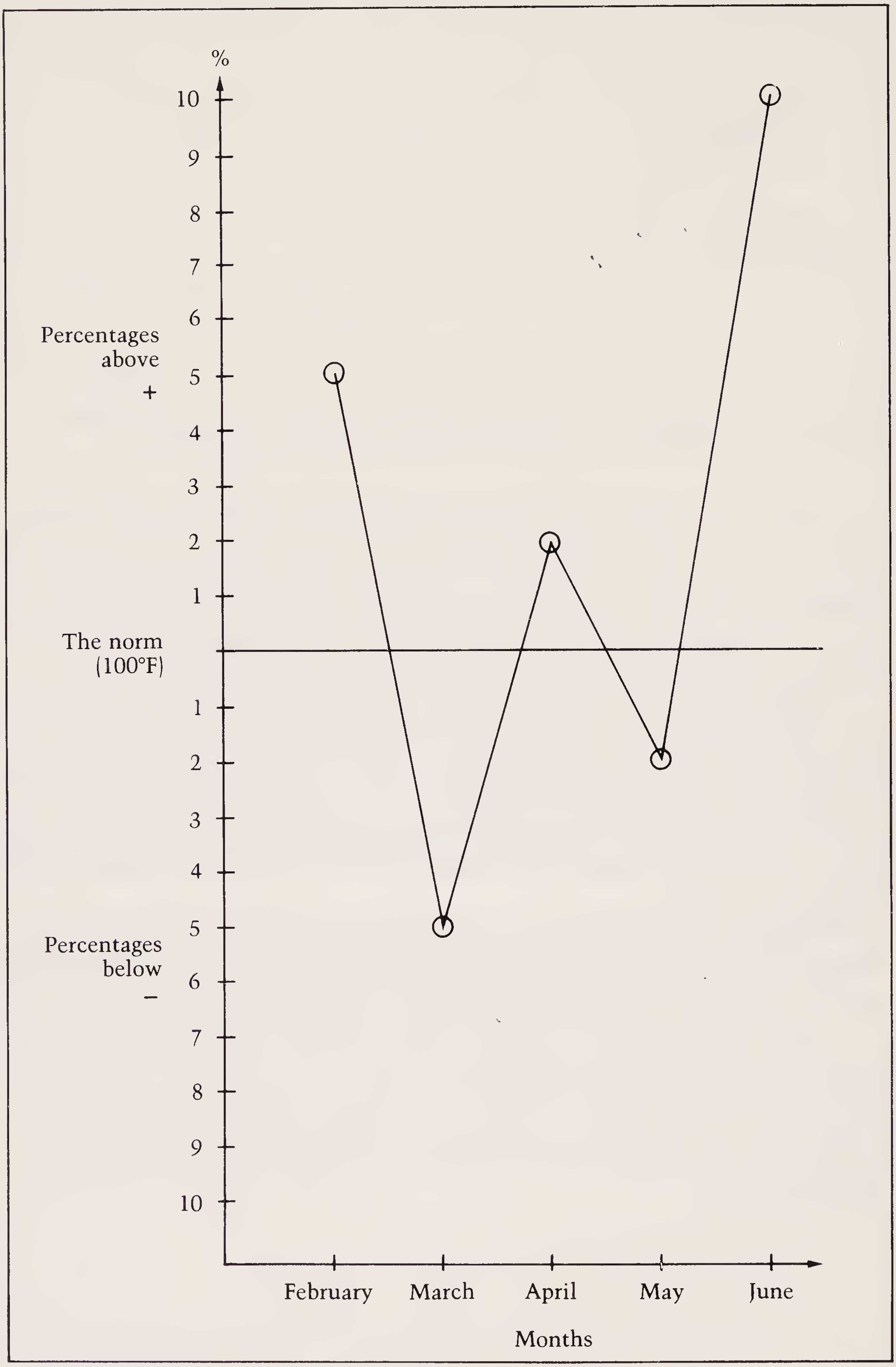

Figure 11. Temperatures during the months February to June, year X, in Palsied Palms, California; months percentage variations from the norm (average) in year X (data based on Table 2).

Figure 12 is a bar chart, a very common type of graph. Typically, cost-of-living changes are shown in bar charts if the purpose is to show how fast prices are rising. Sometimes, also, the same method is used to show year-to-year percentage changes in a nation's total output.

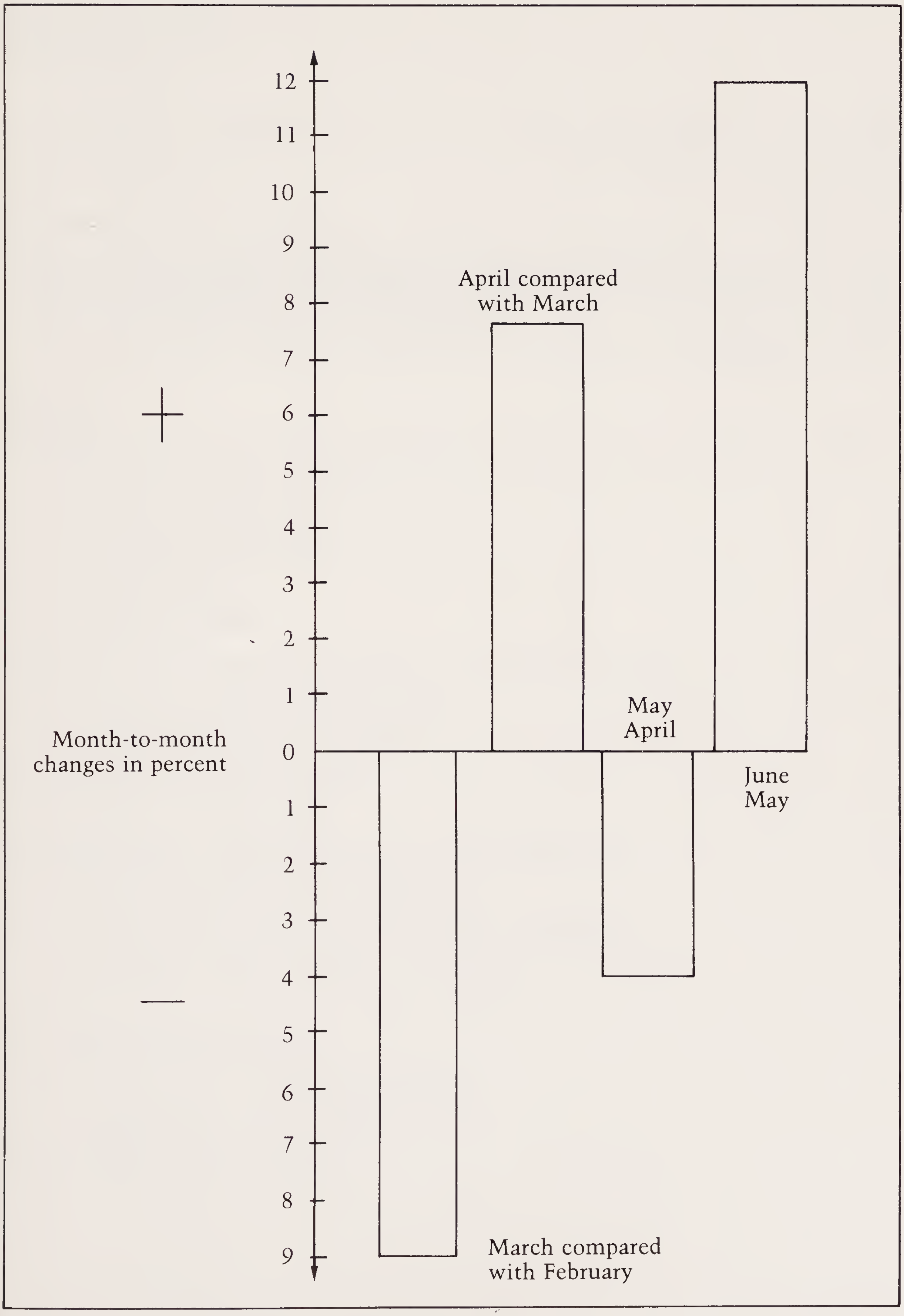

Figure 12. Month-to-month percentage changes in temperature, February to June, year X, Palsied Palms, California (data based on Table 2).

We hope this brief explanation has made you feel more comfortable with graphs. Remember that they are just pictures designed to show the effect of one variable on another—like the effect of caloric intake on weight, or perhaps, the effect of prices on the quantities of things people will buy or sell.

1700 words

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COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. economics.
   b. graphs.
   c. functional graphs.
   d. variables.

2. The main idea is that
   a. there are several types of economic relationships.
   b. an understanding of graphs is important in economics.
   c. most graphs have two variables.
   d. functional graphs are different from time-series graphs.

Details

3. The line connecting the points on a graph slope upward to the right when there is a(n)
   a. direct relationship.
   b. inverse relationship.
   c. time series.
   d. third variable.

4. The most important features on a graph line are
   a. point of origin and direction.
   b. type of variable and slope.
   c. function and variable.
   d. slope and direction.

5. Functional graphs and time-series graphs are
   a. the only two types of graphs.
   b. two of the most common types of graphs.
   c. the only kind of graphs to use with variables.
   d. the most pictorial types of graphs.

6. Opportunity cost is
   a. shown on a functional graph.
   b. shown on a time-series graph.
   c. shown on a bar graph.
   d. impossible to graph.

Inferences

7. Which of the following would be graphed as a time series?
   a. the relationship between I.Q. and reading skills.
   b. the number of foreign-made versus U.S.-made cars sold in 1984.
   c. the effect of cholesterol on heart disease.
   d. the U.S. gross national product for the past decade.

8. Which of the following has a direct relationship?
   a. brains and beauty
   b. age and senility
   c. height and eye color
   d. money and love

9. Which of the following has an inverse relationship?
   a. number of children and disposable income
   b. nutrition and health
   c. intelligence and success
   d. leisure and fun.

10. The bar graph shown in the outline is a
    a. functional graph.
    b. time-series graph.
    c. *ceteris paribus* graph.
    d. graph with no axis.

ESSAY TEST QUESTIONS

1. Pick two variables
   a. for a functional graph and draw the graph.
   b. suitable for a time-series graph and graph them.

2. For each graph that you drew (in questions 1 and 2), describe in words the relationship between its two variables.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **functional** (201)
   a. based on lapses of time
   b. useless
   c. having a value that depends on another quantity
   d. using the mathematical vocabulary
2. **variable** (201)
   a. something that changes
   b. a large quantity
   c. a small number
   d. something unchanging
3. **axis** (201)
   a. a line used for measurement or reference
   b. a rod on which a wheel turns
   c. a statement universally accepted as true
   d. a weapon or tool used for chopping
4. **inverse** (203)
   a. repeated
   b. regulated
   c. same
   d. opposite
5. ***ceteris paribus*** (203)
   a. in God we trust
   b. let the buyer beware
   c. all else remaining the same
   d. a type of whale

Read this article. Write your starting time here: ________.

27

Arguments, Premises, and Conclusions

Patrick J. Hurley

LOGIC MAY BE DEFINED as the science that evaluates arguments. All of us encounter arguments in our day-to-day experience. We read them in books and newspapers, hear them on television, and formulate them when communicating with friends and associates. The aim of logic is to develop a system of methods and principles that we may use as criteria for evaluating the arguments of others and as guides in constructing arguments of our own. Among the benefits to be expected from the study of logic is an increase in confidence that we are making sense when we criticize the arguments of others and when we advance arguments of our own.

Argument, as it is used in logic, means a group of statements, one of which (the conclusion) is intended to follow from the other or others (the premises). All arguments may be placed in one of two basic groups: those in which the conclusion really does follow from the premises, and those in which it does not, even though it is intended to. The former are said to be good arguments, the latter bad arguments. The purpose of logic, as the science that evaluates arguments, is thus to develop methods and techniques that allow us to distinguish good arguments from bad.

As is apparent from the above definition, the term "argument" has a very specific meaning in logic. It does not mean, for example, a mere verbal fight, as one might have with one's parent, spouse, or friend. Let us examine the features of this definition in greater detail. First of all, an argument is a group of statements. A **statement** is a sentence that is either true or false; in other words, typically a declarative sentence. The following sentences are statements:

Hydrogen is combustible.
World War II began in 1939.
Some ducks are fish.
Abraham Lincoln was assassinated.

From *A Concise Introduction to Logic*, by Patrick J. Hurley. © 1982 by Wadsworth, Inc. Reprinted by permission of Wadsworth Publishing Company, Belmont, California 94002.

Many sentences, of course, cannot be said to be either true or false. Questions, proposals, suggestions, commands, and exclamations usually cannot, and so are not usually classified as statements. The following sentences are not statements:

What is the atomic weight of carbon?	(question)
Let's go to the park today.	(proposal)
We suggest that you travel by bus.	(suggestion)
Turn to the left at the next corner.	(command)
Right on!	(exclamation)

The statements that make up an argument are divided into one or more premises and one and only one conclusion. The **premises** are the statements that set forth the evidence, and the **conclusion** is the statement that is intended to follow from the evidence. Here is an example of an argument:

All cats are animals.
Felix is a cat.
Therefore, Felix is an animal.

The first two statements are the premises; the third is the conclusion. In this argument the conclusion really does follow from the premises, and so the argument is a good one. But consider this argument:

Some cats are white Persians.
Felix is a cat.
Therefore, Felix is a white Persian.

In this argument the conclusion does not in fact follow from the premises, even though it appears that it is intended to, and so the argument is not a good one.

One of the most important tasks in the analysis of arguments is being able to distinguish premises from conclusion. If what is thought to be a conclusion is really a premise, and vice versa, the subsequent analysis cannot possibly be correct. Frequently, arguments contain certain indicator words that provide clues in identifying premises and conclusion. Some typical **conclusion indicators** are:

therefore
wherefore
accordingly
we may conclude
entails that
hence
thus
consequently
we may infer
it must be that
whence
so
it follows that
implies that

Whenever a statement follows one of these indicators, it can usually be identified as the conclusion. By process of elimination the other statements in the argument are the premises. Example:

This pen is out of ink. Consequently, it will not write.

The conclusion of this argument is "It will not write," and the premise is "This pen is out of ink."

If an argument does not contain a conclusion indicator, it may contain a premise indicator. Some typical **premise indicators** are:

since
as indicated by
because
for
in that
may be inferred from
as
seeing that
for the reason that
inasmuch as

Any statement following one of these indicators can usually be identified as a premise. Example.

> This locket is worth a lot of money, since it is made of platinum.

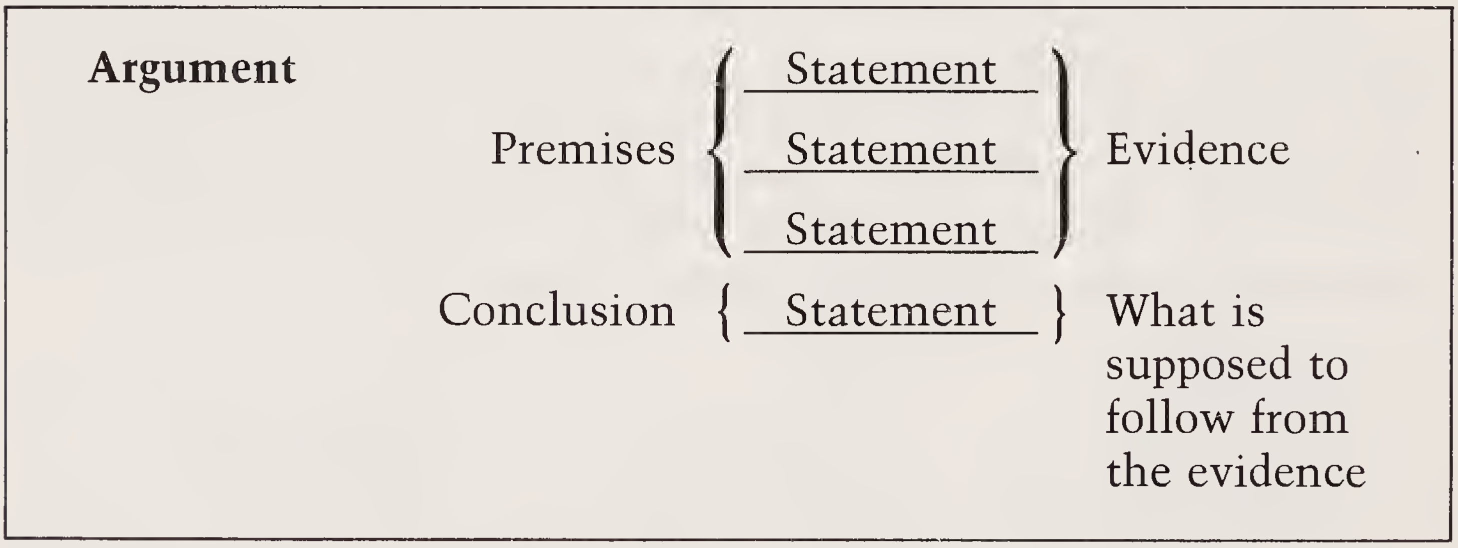
The premise of this argument is "It is made of platinum," and the conclusion is "This locket is worth a lot of money."

One premise indicator not included in the above list is "for this reason." This indicator is special in that it comes immediately *after* the premise that it indicates. "For this reason" means for the reason (premise) that was just given. In other words, the premise is the statement that occurs immediately *before* "for this reason." One should be careful not to confuse "for this reason" with "for the reason that."

Sometimes a single indicator can be used to identify more than one premise. Consider the following argument:

> Jenkins is taller than Smith, for Jenkins is taller than Williams, and Williams is taller than Smith.

The premise indicator "for" goes with both "Jenkins is taller than Williams" and "Williams is taller than Smith"; so these are the premises. By process of elimination, "Jenkins is taller than Smith" is the conclusion.



Sometimes an argument contains no indicators. When this occurs, the reader/listener must ask himself or herself such questions as What is the arguer leading up to? What is he or she trying to prove? What seems to be the main point of the passage? What does the arguer want us to believe? The answers to these questions should point to the conclusion. Example:

> The space program deserves increased expenditures in the years ahead. Not only does the national defense depend upon it, but the program will more than pay for itself in terms of technological spinoffs. Furthermore,

> at current funding levels the program cannot fulfill its anticipated potential.

The main point of this argument is that the space program deserves increased expenditures in the years ahead. All the other statements provide support for this statement. Accordingly, the argument is analyzed as follows:

P_1: The national defense is dependent upon the space program.

P_2: The space program will more than pay for itself in terms of technological spinoffs.

P_3: At current funding levels the space program cannot fulfill its anticipated potential.

C: The space program deserves increased expenditures in the years ahead.

When restructuring arguments such as this, one should remain as close as possible to the original version, while at the same time attending to the requirement that premises and conclusion be complete sentences that are meaningful in the order in which they are listed.

Passages that contain arguments sometimes contain statements that are neither premises nor conclusion. Only statements that are actually intended to support the conclusion should be included in the list of premises. If a statement is irrelevant to the conclusion or, for example, simply makes a passing comment, it should not be included within the context of the argument. Example:

> Socialized medicine is not recommended because it would result in a reduction in the overall quality of medical care available to the average citizen. In addition, it might very well bankrupt the federal treasury. This is the whole case against socialized medicine in a nutshell.

The conclusion of this argument is "Socialized medicine is not recommended," and the two statements following the word "because" are the premises. The last statement makes only a passing comment about the argument itself and is therefore neither a premise nor a conclusion.

The reasoning process that lies behind an argument is called an **inference**. In other words, an inference is what goes on in someone's mind when he or she constructs an argument. Because inferences are mental processes, they are both private and nonlinguistic and are therefore incapable of being directly analyzed by logical principles. They may, however, be indirectly analyzed via the arguments in terms of which they are expressed. As we will see in the next section, inferences may be expressed not only through arguments but through conditional statements and explanations as well. For the purposes of testing, however, many such inferences may be reexpressed in the form of arguments.

That which is expressed by a statement is called a **proposition**. In other words, a proposition is the information content of a statement. Because information may be expressed in many different ways, it follows that one and the same proposition may be expressed by different statements. Furthermore, because the information content of a single statement may shift depending on the time and the place in which it is asserted, one and the same statement may express different propositions. The following statements all express the same proposition:

> The sculptor carves the statue.
> The statue is carved by the sculptor.
> Der Bildhauer meisselt die statue.
> Le sculpteur grave le statue.

Conversely, each of the following statements expresses a different proposition, depending on the time and the place in which it is asserted:

> The headwaters of this river are in Switzerland.
> Tomorrow is the middle of the week.

The first of these statements could express a proposition about the Rhine, Volga, Mississippi, or any other river, depending on the place in which it is asserted, and the second could express a proposition about any one of the days of the week, depending on the time it is asserted.

As these examples illustrate, a legitimate distinction exists between the meanings of "proposition" and "statement." In practice, however, this distinction is frequently ignored and the two terms are used interchangeably. The reason why the distinction is maintained in theory is to provide for the successful analysis of certain types of arguments. Consider the following:

> If Thomas is discovered, he will be arrested. Thomas will be discovered. Therefore, he will be arrested.

This is a good argument; the conclusion follows from the premises. But if it is analyzed exclusively in terms of its component *statements*, there is no way of proving that the conclusion follows from the premises. Because "Thomas is discovered" and "Thomas will be discovered" are not literally the same statement, the two premises cannot be connected together; but if this cannot be done, the conclusion cannot be derived. Since these statements do, however (at least within the context of the argument), express the same *proposition*, if the analysis is conducted in terms of propositions it may readily be established that the conclusion follows logically from the premises.

1800 words

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COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. defining logical terms.
   b. defining the terms, argument, premise, and conclusion as they are used in logic.
   c. problems with logical reasoning.
   d. judging the validity of various arguments in logic.

2. The main idea of the article is that
   a. most people can't recognize good logic.
   b. terms in logic have specialized meanings.
   c. judging the validity of arguments is difficult.
   d. understanding arguments, premises, and conclusions is basic to understanding logic.

Details

3. An argument is a
   a. declarative sentence.
   b. proposal.
   c. group of statements with a premise and a conclusion.
   d. conclusion.

4. Which would not be an indicator of a conclusion?
   a. whence
   b. implies that
   c. because
   d. entails that

5. A proposition is defined as
   a. a good argument.
   b. any premise.
   c. an inference.
   d. the information in a statement.

6. A good argument is one that
   a. contains a conclusion.
   b. has only two premises.
   c. follows from the conclusion.
   d. has a conclusion that follows from the premises.

Inferences

7. From the article you can conclude that
   a. propositions are based on carefully drawn conclusions.
   b. terms are carefully defined in logic.
   c. you can never reverse the conclusion and a premise and be sure you are still correct.
   d. all of the above are true.

8. From the article you can conclude that
   a. a conclusion can never be used as the premise of the next argument.
   b. premises usually contain propositions.
   c. logic is a precise science.
   d. logical arguments usually are difficult to follow.

9. From the article you can conclude that
   a. premises must be stated to be valid.
   b. some premises can be inferred.
   c. the world is not based on logic.
   d. inferences have no place in logic.

10. The author is probably writing this article for
    a. a group of logicians.
    b. a group of novices.
    c. philosophy teachers.
    d. high school students.

ESSAY TEST QUESTIONS

1. Explain, with examples, the difference between good and bad arguments.

2. Give some examples of bad arguments that you have seen reported in the newspaper, on television (including commercials), and in other current sources.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **declarative** (216)
   a. making a statement
   b. asking a question
   c. discovering an idea
   d. coming to a conclusion

2. **whence** (217)
   a. to where
   b. by way of
   c. from where
   d. whenever

3. **irrelevant** (219)
   a. important
   b. complicated
   c. partial
   d. not to the point

4. **nonlinguistic** (219)
   a. logical
   b. illogical
   c. cannot be stated in words
   d. can be stated in words

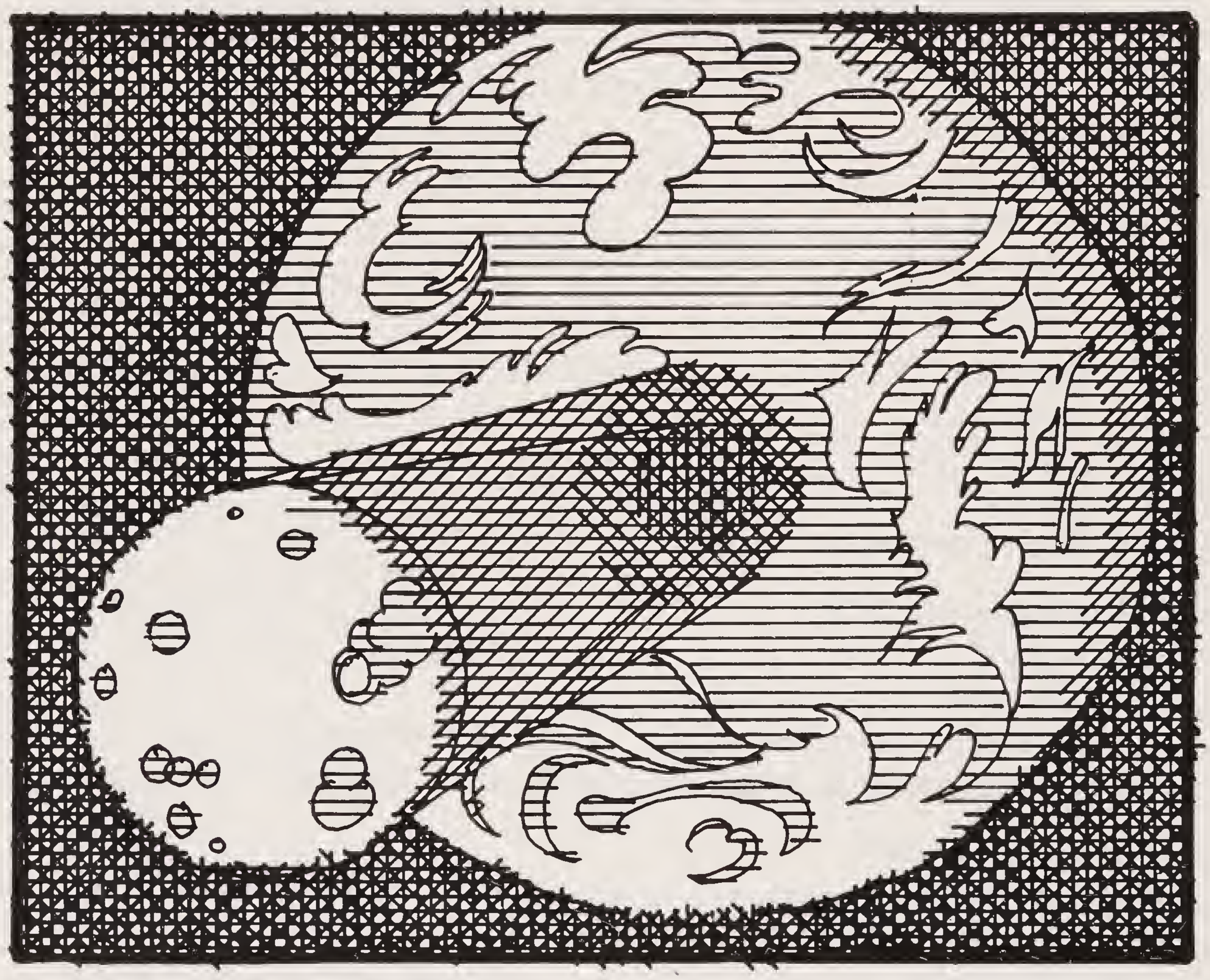
5. **conversely** (220)
   a. continuously
   b. obviously
   c. contrarily
   d. repetitiously

Read this article. Write your starting time here: ________.

28

Eclipses: Occasions for Awe

William K. Hartmann



So far we have treated the moon and the sun as independent bodies that could be tracked for practical purposes. Cycles of the moon divide the year into about 12 equal months; solstices and equinoxes, defined by sunrise positions, divide the year into four seasons. Ancient people who discovered these facts may have gained a sense of well-being: At least *some* things in their environment could be counted on from year to year. Calendars could be made and agriculture regulated. The predictable, friendly sun could be worshiped as a deity, always providing light and warmth.

What, then, could be made of **eclipses**, the sporadic occasions

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From *Astronomy: The Cosmic Journey*, Second Edition, by William K. Hartmann, pp. 18–26.
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when the sun or more commonly the moon disappears while above the horizon? In the few minutes of a total solar eclipse the sky turns dark, stars can be seen in daytime, and an uncanny chill and gloom settle over the land. During the hours of a total lunar eclipse, the moon turns blood-red. Small wonder that the Greek root of eclipse, *ekleipsis*, means abandonment, or that the ancient Chinese pictured a solar eclipse as a dragon trying to devour the sun. Eclipses must have seemed an unpredictable menace to the scheme of things.

We know eclipses awed early people. In Greece, the poet Archilochus, observing the solar eclipse of April 6, 648 B.C., was moved to write:

> *Nothing can be sworn impossible . . . since Zeus, father of the Olympians, made night from mid-day, hiding the light of the shining sun, and sore fear came upon men.*

Herodotus reports that a war between the Lydians and the Medes stopped when an eclipse surprised the competing armies during a battle in the 580s B.C. A hasty peace was cemented by a double marriage of couples from the opposing camps.

Knowledge of what causes eclipses allayed people's fears of them. And if people knew how to predict eclipses they could become very powerful. For instance, in February 1504, Christopher Columbus was having trouble convincing Jamaicans that they should feed him and his crew. Seeing that his almanac foretold an eclipse of the moon on February 24, Columbus warned the Indians that the Christian god would punish them by turning the moon to blood. The scoffing natives changed their attitude when the eclipse began on schedule.

This event may have inspired Mark Twain, whose Connecticut Yankee established his authority in King Arthur's court by predicting a total solar eclipse and then "commanding" the eclipse to end. This imaginative scene suggests the political prestige gained by some of the first priest-astronomers who discovered how to predict eclipses.

CAUSE AND PREDICTION OF ECLIPSES

Whatever their emotions and motives, some early people learned how to predict eclipses—and this was an early step toward recognizing that we live on a world among worlds orbiting in space.

To understand how eclipses can be predicted, we should first understand the **causes of eclipses.**

Two important things to remember about eclipses are: (1) They happen when the shadow of one celestial body falls on another, and (2) what you see during an eclipse depends on your position with respect to the shadow. If you see an eclipse at all, you are either in the shadow (a celestial body has come between you and the source of light) or you are looking at the shadow from a distance as it falls on some surface.

Earthbound observers see two types of eclipses: solar and lunar. **Solar eclipses** occur when the moon, on its 29½-d journey around the earth, happens to pass between the earth and the sun. A **total solar eclipse** occurs if the moon completely covers the sun as seen by an earthbound observer. A **partial solar eclipse** occurs if the moon is "off center" and covers only part of the sun. By coincidence, the moon happens to have the same angular size as the sun—about ½°, or a little less than the angular size of a little fingernail at arm's length. Therefore, the moon usually just covers the sun during a solar eclipse. But if the moon happens to be at the farthest point in its orbit, it has a smaller angular size than usual and doesn't quite cover the sun. This causes an **annular solar eclipse,** in which the observer sees a ring (Latin *annulus*) of light, which is the rim of the sun, surrounding the moon.

Lunar eclipses occur when the moon, on its journey around the earth, passes through a point exactly on the opposite side of the earth from the sun. This point lies in the shadow cast by the earth. It takes the moon a few hours to pass through the earth's shadow, during which time the moon turns an astonishing copper-red from sunlight passing through the earth's atmosphere.

UMBRAL AND PENUMBRAL SHADOWS

In solar and lunar eclipses, the shadows of the earth and the moon are not sharply defined. Because the sun as seen from the earth has an angular size of ½°, sunlight is slightly diffuse; its rays come from slightly different directions.

Thus, shadows—including eclipse shadows—cast by sunlit objects near the earth are not sharply defined. The inner, "core" area of a shadow—the part that receives no light at all—is named from the Latin word for shadow, **umbra.** The outer, fuzzy boundary is called the **penumbra.** An observer in the umbra sees the sun entirely obscured; an observer in the penumbra sees the sun only partly obscured. If you hold your hand at eye level above smooth ground in sunlight, its shadow will have a central, dark umbra and penumbra about a centimeter wide. If you hold your hand high and spread your fingers, their shadows will be indistinct. An ant in the umbra would see a total solar eclipse; an ant in the penumbra would see a partial solar eclipse.

The relative sizes of umbra and penumbra depend on the distance between the shadow-casting body and the surface on which the shadow appears. During a lunar eclipse, the earth's shadow on the moon has an umbra several times the moon's diameter, and a considerably larger penumbra. Total lunar eclipses, with the moon in the umbra, can last up to 1¾ h.

On the other hand, the moon's umbral shadow on the earth does not exceed a 267-km (167-mi) diameter. Due to the motion of this shadow across the earth, total solar eclipses cannot last more than 7½ min. In an annular eclipse, the moon is too far away to produce any umbral shadow, and the eclipse has no true total phase.

But the moon's orbit is tipped by an angle of 5° out of the earth's orbital plane. Therefore the moon is likely to pass "above" or "below" the earth–sun line and the earth's shadow. Since the two orbital planes must, by simple geometry, intersect in a line, there is a line that contains the **nodes,** the only two points where the moon passes through the earth's orbital plane. This line between the two points is called the **line of nodes.** To produce an eclipse, the moon must be near one of the nodes, and even then *an eclipse will occur only if the line of nodes is pointing at the sun.*

When is the line of nodes pointed at the sun? If no external forces acted on the moon's orbit, the orbital plane would stay fixed with respect to the stars, and the line of nodes would line up with the sun twice a year. Eclipses *could* occur at these two possible times each year, but *only* if the moon moved through points N and N′ at these moments. Predicting eclipses would require alertness during only two intervals per year.

But there is one last complication. The moon's orbit is not fixed with respect to the stars. It is disturbed by various forces. As a result of these forces, the moon's orbit shows what is called a **regression of nodes:** The orbital plane swings slowly around, always keeping its 5° tilt to the earth's orbital plane. This regression of nodes is analogous to the precession of the earth's axis. The line of nodes NN′ rotates slowly with respect to the stars, taking 18.61 y (years) to complete one rotation. Therefore, the line of nodes aligns itself with the sun twice in a period somewhat less than a year. This period, called the *eclipse year,* turns out to be 346.6 d.

Thus several simultaneous cycles must be in phase to produce an eclipse: the 29.5-d cycle of lunar revolution with respect to the sun; the 1-y cycle of the earth's revolution; and the 18.6-y lunar regressional cycle. These overlapping cycles cause subtle periodicities in the occurrence of eclipses. These periodicities helped ancient astronomers discover how to predict slopes, as we will see in the next sections.

DISCOVERY OF THE SAROS CYCLE (C. 1000 B.C.?)

From the information given above, we can understand one periodicity among eclipses. The moon passes nearest the sun's direction every 29.5 d (month), and the node N lines up with the sun every 346.6 d (eclipse year). A lunar or solar eclipse occurs if the two cycles coincide. How often do they coincide? Using figures more exact than those given above, we find that 223 lunar months equal 6585.321 d, while 19 eclipse years equal 6585.781 d. Thus, the two cycles come almost exactly into phase (to within only 0.46 d) every 6585 d, or 18 y, 11 d.

This interval is called the **saros cycle** (a Greek name from an earlier Assyrian–Babylonian word). Early astronomers discovered that if, in a given year, a particular sequence of eclipses occurred, a similar sequence would probably occur after one saros. (Shorter periodicities, such as 41 and 47 mo [months], also exist but are less accurate. Various periodicities were discovered and used by early astronomers to predict eclipses.)

Because the moon's umbral shadow on the earth is so small, a fixed observer has only a small chance of seeing any given solar eclipse. But because the earth's umbra is large and because the moon can be seen from the whole night hemisphere of the earth, half the earth will see every lunar eclipse (barring cloud cover). Total lunar eclipses are therefore relatively common for any observer, and they were thus easier than solar eclipses for ancient astronomers to predict using the saros and other cycles. Modern astronomers use computers and orbital theory, not cycles, to predict all eclipses accurately.

On the average a given location may witness a lunar eclipse nearly every year and a partial solar eclipse nearly every other year, but a total solar eclipse only about once every four centuries. Many of the dates are related by cycles.

Let us now return to the viewpoint of ancient earthbound peoples. Once records were made and kept, astronomers could benefit from their community's past observations of eclipses. If they discovered periodicities, they could make rough predictions. We know this happened by 700 B.C. in the Mediterranean area and probably by about A.D. 500 in Central America, because records found in Assyrian libraries and Mayan cities discuss the prediction of eclipses.

TWO EXAMPLES OF ANCIENT ECLIPSE PREDICTION

Thales (c. 580 B.C.). Historical records indicate that one of the first known astronomers, Thales of Miletus, predicted the eclipse that stopped the battle between warring Greek factions in the 580s B.C. Thales may have made this prediction by knowing of the saros cycle from Mesopotamian records, or he may have discovered a useful 3-saros periodicity of 669 lunar months, which would have been prominent in the eclipse records of his region for the preceding 125 years.

Mayans (c. A.D. 400). We know that Mayan astronomers of Mexico and Guatemala recorded and predicted eclipses long before European contact. One of three priceless Mayan manuscripts left after the Spanish conquest is a record of observed and predicted solar eclipses as well as other astronomical information, such as the motions of Venus. Tragically, because the Spaniards burned 27 other Mayan manuscripts in 1562, we may never know the extent of Mayan knowledge.

While the Mayan calendrical system had a 365-d yearly count and a so-called long count, or cumulative tally of days since a starting date about 3000 years previously, it also had a cyclic count useful for predicting eclipses. A combination of word names and number names for days (such as our usage *July 4*) produced a 260-d cycle called the **Mayan Sacred Round.** In other words, the day names repeated every 260 d. As we have seen, the nodes of the moon's orbit are aligned with the sun (in position for potential eclipses) once every 173.31 d. Eclipses could thus occur 3 times in 519.93 d, less than 2 h short of two Mayan Sacred Rounds. The Sacred Rounds thus let Mayan priests be aware of possible eclipses.

Why did the Mayans (and perhaps others) develop an eclipse-based calendar? One motivation may have been the fact that *five* solar eclipses were visible in the Mayan area during the 14 y from A.D. 331 to 334: a total eclipse in 331, a partial eclipse in 335, near total eclipses in 338 and 344, and an annular eclipse in 342 (Harber, 1969).

Such a cluster of eclipses may have impelled the Mayan priest-astronomers to keep records so that they could predict the sun's next disappearance. In fact, the first astronomical observations in the Mayan manuscripts date from about this time. Interest in eclipses may have been further spurred in A.D. 495, when two partial solar eclipses were visible in Central America only 30 d apart, with a lunar eclipse between them (Owen, 1975). Mayan astronomy was supported by the state and highly organized, as shown by a convention of prehistoric Central American astronomers at Copán, Honduras (probably on May 12, 485) to discuss the calendrical system.

Although the Mayan priests probably could not predict every eclipse, once they got their calendrical system working they might have had the best of both worlds. When they correctly predicted an eclipse, their power and knowledge were proved; when predicted eclipses did not occur, they could attribute this happy omen to the power of their rituals. The successes and failures of Mayan astronomy may thus have worked together to nourish the cultural traditions and help sustain the society for centuries.

We should also note that some scholars attribute the moon alignments at Stonehenge to eclipse-predicting efforts dating as early as 2000 B.C., but this conclusion is quite controversial.

2500 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. prediction of eclipses.
   b. causes of eclipses.
   c. ancient theories of eclipses.
   d. knowledge about eclipses.

2. The main idea is that
   a. understanding of eclipses has increased since ancient times.
   b. ancient people knew a lot about eclipses.
   c. eclipses can be predicted mathematically.
   d. eclipses are caused by shadows.

Details

3. Umbras and penumbras have to do with
   a. the saros cycle.
   b. lunar versus solar eclipses.
   c. the frequency of eclipses.
   d. total versus partial eclipses.

4. The most commonly observed eclipses are
   a. solar.
   b. lunar.
   c. annular.
   d. nodal.

5. Eclipses were most successfully predicted by the ancient
   a. Chinese.
   b. Aztecs.
   c. Mayans.
   d. Druids.

6. A lunar eclipse occurs when the
   a. sun comes between the earth and the moon.
   b. sun casts a shadow on the moon.
   c. moon passes through the earth's shadow.
   d. moon is "off center" and covers only part of the sun.

Inferences

7. Primitive superstitions about eclipses illustrate
   a. the increase in intelligence of modern man.
   b. the dangers of trusting "priests."
   c. civilization's rise from savagery.
   d. the human need to make sense of the world.

8. Ancient and modern politicians are alike in that they
    a. manipulate facts to increase their power.
    b. claim supernatural power.
    c. understand eclipses.
    d. are the most knowledgeable people in the society.

9. Fear seems to be increased by
    a. religion.
    b. the dark.
    c. the unknown.
    d. scientific knowledge.

10. The article suggests that
    a. power corrupts.
    b. knowledge is power.
    c. ignorance is bliss.
    d. all of the above are true.

ESSAY TEST QUESTIONS

1. Describe the causes of the two types of eclipses visible from Earth.

2. Trace the development of knowledge about eclipses.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **deity** (224)
    a. man
    b. idol
    c. god
    d. neighbor

2. **sporadic** (224)
    a. constant
    b. special
    c. frightening
    d. random

3. **allayed** (225)
    a. caused
    b. maintained
    c. increased
    d. relieved

4. **diffuse** (226)
    a. concentrated
    b. dark
    c. dispersed
    d. changed

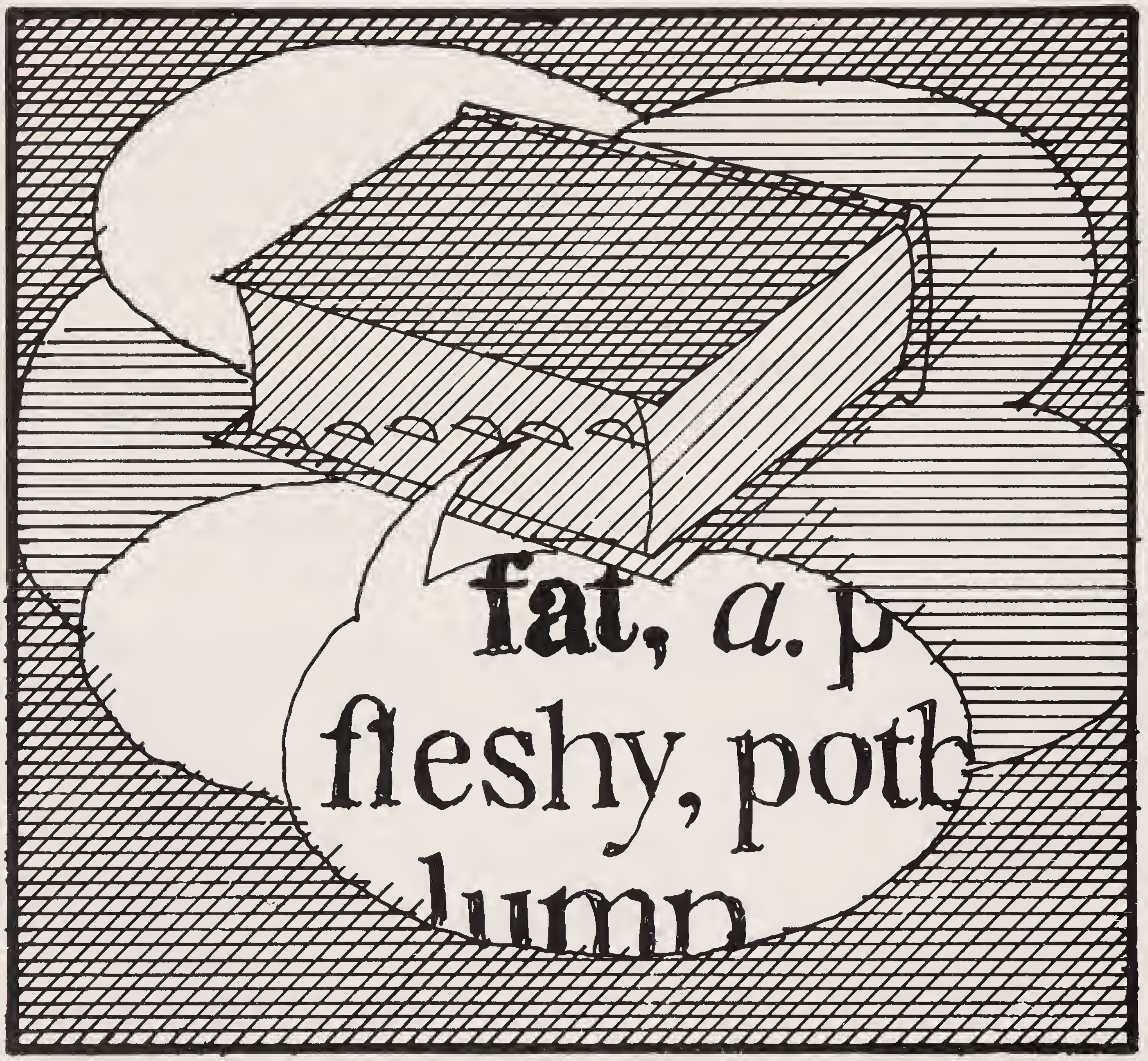
5. **regression** (227)
    a. going back
    b. moving toward
    c. avoiding
    d. discovering

Read this article. Write your starting time here: ________.

29

Choosing the Right Word

Rudolph F. Verderber



BECAUSE OF THE WAY that words and meaning are related, a skilled communicator must be careful when making assumptions about either word selection or word understanding. Although such expressions as "picking exactly the right word" leave the impression that a master of language need only learn enough words, the role of language in communication is far more complicated. You can get a proper perspective on language if you are consciously aware of how words get their meaning and of what complicates the use of words in speech and writing.

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WORDS AND MEANING

You are likely to have a better appreciation for meaning if you understand that whatever meaning we assign a word is arbitrary, conventional, and learned.

When we say that meaning is *arbitrary*, we mean that it is a matter of choice. Whether the word is *chair*, *sister*, or *predilectory* we know that someone at some time had to use those letters (sounds) in that order for the first time. So someone chose to try a certain word to convey some meaning. What happened then?

Before a word begins to carry any standard meaning, its use must become *conventional*. That is, the arbitrary choice must become the choice of a large number of people. At some point in history it may have been a single person's idea to call a female sibling a sister. But the use of *sister* as a symbol with a specific meaning wasn't possible until others started using that word when they wanted to express the idea of female sibling. Every day some person may use certain new sound patterns for the first time to stand for something, but the word does not become part of the language until other people have used the word often enough to make it conventional.

Finally, meaning is *learned*. Because of the arbitrary, conventional nature of words, each new generation must learn the language anew. Children's brains enable them to think, and their vocal mechanism allows them to form any number of sounds. But determining which sounds go together to form which words is a skill that must be taught from generation to generation.

By the time you were three to five years old, you had learned enough vocabulary to communicate almost all of your basic ideas and feelings, and had mastered enough grammar to be understood. Since then, you have enlarged your vocabulary and sharpened your understanding of grammar.

Because meanings are learned, they are subject to the limitations of the learning process. That is, people do not all learn exactly the same meanings for words, and they do not learn exactly the same words. You must never assume, therefore, that another person will know what you are talking about just because that person uses words that you have learned. And of couse, as your understanding of the language affects your ability to listen, so it affects your ability to communicate with others, either by writing or by speech.

COMPLICATIONS IN USING WORDS

Until we develop some form of telepathy (and I doubt any of us are going to see that day), we must share our ideas and feelings indirectly through a system of symbols, that is, through words. This symbol system is often an imperfect means of sharing. If you are going to be effective as a communicator, you must be able to distinguish, for example, between denotative and the connotative meanings of words; and you must be able to apply your understanding to your speaking.

Denotation

Denotation means the direct, explicit meaning or reference of a word; denotation is the meaning given in a dictionary. Knowing dictionary definitions is useful in communication, but even with a firm grasp of word denotations, you can still encounter problems. Let us examine a few.

A great many words carry multiple meanings. If we looked up the 500 most commonly used American words in any dictionary, we would be likely to find more than 14,000 definitions. Some of these definitions would be similar, but some would vary greatly. Take the word *low,* for instance. *Webster's New World Dictionary* offers twenty-six meanings for *low.* Number 1 is "of little height or elevation"; number 8 is "near the equator"; and number 16 is "mean; despicable; contemptible."[1] No matter how we look at these three definitions we have to admit that they are quite different.

As words get more difficult, we begin to find fewer and fewer definitions. Thus, it is usually with our most common words that we get into the most trouble. These common words have so many different meanings that unless we examine the context carefully, we may get (or give) the wrong idea. However, if we use a more precise word, some in our audience may not be familiar with it.

A second problem is that meanings of words change with time. According to W. Nelson Francis, in the 700 years *nice* has been in the English language, it "has been used at one time or another to mean the following: foolish, wanton, strange, lazy, coy, modest, fastidious, refined, precise, subtle, slender, critical, attentive, minutely, accurate, dainty, appetizing, agreeable."[2]

If we think about it, we all know some words that have changed their meaning over a relatively short period of time. The word *gay* is one example. Although *gay* meaning joyous is still heard, it is becoming obsolete. If you describe another person as "gay," and you mean happy or joyous, you will probably be misunderstood; others will think you mean "homosexual."

A third problem is the influence of context. The position of a word in a sentence and its relationship to the words around it may change the denotation. When a young girl says, "Dad, you owe me a dime," the meaning is somewhat different from when she says, "Dad, I need a dime for the machine." In the first case, any combination of coins adding to ten cents will probably be acceptable; in the second case she is looking specifically for that small coin that we call a "dime."

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[1] *Webster's New World Dictionary,* 2d college ed. (Cleveland, Ohio: William Collins & World, 1978), p. 839.

[2] W. Nelson Francis, *The English Language* (New York: W.W. Norton, 1965), p. 122.

Examples of the influence of context abound. Think of the difference between "George plays a really mean drum" and "The way George talked to Sally was downright mean."

Connotation

Whereas denotation refers to the most basic, explicit definition of a word, *connotation* refers to the feelings that a particular word arouses.

If a person has had any experience with the referent of a word that is spoken (especially a specific, concrete word for which there is a clearly defined referent), the person is likely to have some feelings about that word. Take the word *home*. If *home* to you is a place filled with fun, love, understanding, warmth, and good feelings, it means something far different to you than it would if *home* were a place filled with fighting, bickering, punishment, confinement, and harsh rules.

Any word has potential feelings and values attached to it for the person using the word. As a speaker, then, you must take into account both the standard denotative meaning and the potential connotative meaning of the word to the specific person or persons with whom you are communicating. If in a speech Carol says, "Americans have very special feelings about dogs," Carol must understand that her sentence denotes a domesticated mammal, a denotation that her audience is likely to share. But if she is planning to communicate ideas of warmth and happiness with her sentence she may not succeed since members of her audience may not share this meaning—this connotation—of *dogs*.

If you understand how your audience may feel about the words you use, you can better understand and communicate with its members. A congressional representative who is going to use words like *busing, schools,* and *taxes* in a speech to her constituency must consider the connotations these words are likely to have for her audience. Then she must make a special effort to use the words in a way that will increase the likelihood of her audience getting the same meaning she was intending.

1300 words

Write your ending time here: ______________________________

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Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back back at the article.

Subject and Main Idea

1. The subject is
   a. vocabulary development.
   b. some problems in communication.
   c. connotation and denotation.
   d. speaking correctly.

2. The main idea is that
   a. writers should use a dictionary and a thesaurus.
   b. skilled communicators use clear language and good grammar.
   c. effective communicators must be careful in their assumptions about word selection and word understanding.
   d. skilled speakers and writers can manipulate their audiences by using some communication tricks.

Details

3. *Denotation* means
   a. the direct, explicit meaning or reference of a word.
   b. the influence of context.
   c. the way words change with time.
   d. the feelings that a particular word arouses.

4. The influence of context refers to the
   a. feelings and values attached to words.
   b. relationship of a word to the words around it.
   c. fact that more difficult words have fewer denotations.
   d. fact that some words have more connotations than others do.

5. The problem with difficult words is that
   a. their meanings are too precise.
   b. not many people know their meanings.
   c. their meanings can change rapidly.
   d. they have too many connotations.

6. A conventional usage of a word is one that
   a. has several denotations.
   b. was arbitrarily assigned.
   c. has been learned.
   d. is shared by many people.

Inferences

7. The word *happy* probably has fewer meanings than the word
    - a. *run.*
    - b. *parsimonious.*
    - c. *indubitable.*
    - d. *gossamer.*

8. Which word probably has more connotations?
    - a. *crucible*
    - b. *diorama*
    - c. *quadrangle*
    - d. *mother*

9. The author implies that a public speaker should
    - a. always try to use words that have precise meanings.
    - b. avoid using words with double meanings, such as *gay*.
    - c. adapt a speech to fit the audience.
    - d. avoid words with too many connotations.

10. Lack of awareness of the arbitrary, conventional, and learned nature of word meanings could cause
    - a. business problems.
    - b. marital problems.
    - c. wars.
    - d. all of the above.

ESSAY TEST QUESTIONS

1. Define and give examples of connotation and denotation.

2. Take a recent political speech or a television commercial and discuss the use of connotative language.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **arbitrary** (233)
   a. purposeful
   b. silly
   c. a matter of choice
   d. logical
2. **sibling** (233)
   a. brother or sister
   b. mother or father
   c. aunt or uncle
   d. grandparent
3. **explicit** (234)
   a. clear
   b. hinted at
   c. general
   d. possible
4. **referent** (235)
   a. meaning
   b. spelling
   c. what is referred to
   d. origin
5. **constituency** (235)
   a. friends
   b. boss
   c. teachers
   d. voters

Read this article. Write your starting time here: ________.

30

Social Class in America

Serena Nanda

THE UNITED STATES is said to have a relatively open class system; one's position depends largely on achieved statuses such as occupation, education, and life style, and there is a relatively good chance for upward mobility. The open class system of our society is part of our mythology and is based on the democratic principle of equality and opportunity for all. Many people in the United States find it difficult to accept the evidence that this equality has not yet been fully realized, and that, in fact, social class is an important aspect of social organization in our nation. Many studies have shown that social class membership does appear to correlate with various attitudinal, behavioral, and life style factors, testifying to the reality of social classes.

Although social scientists agree that class is important in the United States, they do not agree on the exact nature of our class system, nor on how to go about studying it. Earlier studies of social class, some of which have been carried out by anthropologists, have mainly been carried out in small cities and towns, whose social organization may be more typical of the American past than its future. One study of social class in a sprawling metropolitan area was that carried out by Harold Hodges (1963)* in the San Francisco Peninsula area of California. Hodges' study points up a social class system that includes six basic divisions.

1. *Lower-lower class.* This stratum, which accounts for about 20 percent of the population, includes unskilled blue-collar workers who are frequently unemployed. Members of the class tend to be school dropouts who marry and have children at an early age. They live in slum areas, are heavily in debt, and buy most of

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Reprinted in Serena Nanda, *Cultural Anthropology* (New York: D. Van Nostrand Co.), 1980, pp. 182–185. Reprinted by permission of Wadsworth Publishing Company, Belmont, California 94002.

*Harold M. Hodges, Jr. "Peninsula People: Social Stratification in a Metropolitan Complex," in Harold M. Hodges, and W. Warren Kallenbach, eds., *Education and Society.* Columbus, Ohio: Charles E. Merrill, 1963.

their household goods on time. Although the people of this class subscribe to many middle-class American goals, such as material well being, technological progress and upward mobility, they admit they have no control over their lives and tend to be pessimistic about their futures. They believe in traditional domestic roles for women and value obedience in children. Their leisure time is spent reading magazines, watching television, and (for the men) going to bars. They are mainly Catholics or belong to fundamental Protestant sects. They are looked down upon by everyone in the community and know it.

2. *Upper-lower class.* These people are about 30 percent of the population. They are semiskilled or skilled blue-collar workers and have higher incomes and steadier jobs than the lower-lower class. They have either finished or almost finished high school. The men hunt, fish, and watch sports in their leisure time. The members of this class are very concerned with raising their social position in life and in "keeping up with the Joneses." Although the "he-man" self-image is very important to the males of this class, they are more likely to help their wives with domestic chores than husbands in any other class category. Members of this class belong to trade unions, vote Democratic, and support liberal legislation on economic matters.

3. *Lower-middle class.* These also are about 30 percent of the population and include salespeople, clerks, and owners of small businesses. They are an important market for the mass media, as they are typically high school graduates with good incomes. They tend to live in suburban tract houses. Politically and economically they are conservatives. They tend to be patriotic and religious and committed to the "Protestant Ethic" of hard work. Although they give lip service to the ideals of thrift and frugality, they, more than any other class, tend to spend above their means. For all their hard work and old-fashioned morality, however, they feel neglected and alienated in contemporary American society and are sometimes referred to in the media as the "silent majority" or the "forgotten Americans."

4. *Upper-middle class.* This group includes 10 to 15 percent of the population and is made up of professionals, semi-professionals, independent businesspeople, and corporate employees in middle management. The members of this class usually have attended college a year or two beyond the B.A. degree. They are the pacesetters of American society in style of clothing, furnishings, and behavior. They are democratic, tolerant, and optimistic about human nature and their own lives. They are also competitive

and upwardly mobile, preparing their children as best as they can educationally so that they can compete economically and socially. From this class come the joiners; they join professional societies and are active in politics. The upper-middle class spends its leisure time reading, listening to music, going to museums and to the theater. They may have a religious affiliation, but for them religion is primarily a social obligation. This class has the lowest rate of broken marriages. Another characteristic of this class is their high geographical mobility.

5. *Upper-middle, newly rich.* This class includes only a fraction of the population. They are in various statuses that are marginal to the main class system, such as movie star and international celebrity, but they are very rich. People in this class seek admittance into the higher class, but will have to wait a couple of generations. These are the people who attract attention for their showy life style and the display of their possessions, which symbolize their wealth.
6. *Upper-upper class.* This group, only 1 to 2 percent of the population, has everything: power, prestige, and the right family background. They are in the Social Register and trace their ancestors back to the *Mayflower.* This class does not display its wealth in obvious ways, but entertains lavishly and often. Its members have attended the best schools and colleges. Tradition is important, and they are more authoritarian than the upper-middle class. Their occupations tend to be those of banker, stockbroker, architect, and physician.

This description of social class will not fit every region and local community in the United States. But in general outline, it does coincide with many earlier studies of social stratification in "typical" American communities, such as the Lynds' (1937) study of a midwestern city they called Middletown, and Lloyd Warner's (1963) study of a New England town he called Yankee City.

As we can see from Hodges' study, social class is more than an economic phenomenon. A social class is also a **subculture**; its members share similar life experiences, occupational roles, values, educational backgrounds, associational affiliation, leisure time activities, buying habits, and political views. Beyond being linked by these shared traits, members of a social class tend to associate more with one another than with persons in other classes. Studies of social stratification in many societies show that informal social interaction such as visiting most frequently involves members of the same class. Thus, the life style and interactional dimensions of social class reinforce one another. Through interaction based on common residence and school-ing, for example, individuals learn the life style of their social class. Since life style is an important part of sociability, people with similar life styles tend to associate with one another.

SOCIAL CLASS AND LIFE CHANCES

Some social scientists argue that an approach to social stratification which emphasizes life style, cultural patterns, and prestige, as Hodges' study does, obscures important economic and power differences in American society. Another way to look at social class that brings economic factors and power into sharper focus is to examine the differences in life chances among social classes. **Life chances** refer to an individual's opportunity to fulfill or fail to fulfill his or her potential in society. An individual's life chances include the chance of survival, opportunities to obtain an education that will help maximize intellectual and creative potential, opportunities to participate in associations and cultural life, and opportunities to live in comfort and security.

An individual's life chances are linked to his or her position in the stratification system. Although the American myth of equality includes the belief that "anyone can become president," the relationship between life chances and social mobility does not uphold this idea. Social mobility is also a life chance that depends on where one already is in the class system. Individuals born into positions of wealth, high status, and power strive to maintain those positions, and because of their high social class frequently have the means to keep others from achieving mobility. People born into the middle class have a better chance of improving their life chances than people born into a poor class. The very poor, and those who belong to minority groups that are discriminated against in our culture, have lower life chances than the middle class. Low social position not only tends to negate one's own life chances, but also those of one's children. Poverty tends to perpetuate itself through generations, calling into question the openness of the American class system.

1400 words

Write your ending time here: ______________________________

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Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. social mobility.
   b. social class in the United States.
   c. characteristics of social classes.
   d. injustice to the poor.

2. The main idea is that the United States
   a. has a class system.
   b. has an open class system.
   c. has a class system that is controversial.
   d. denies mobility to the lower classes.

Details

3. In an open class system, one's position depends on
   a. achieved status.
   b. inherited status.
   c. money.
   d. education.

4. The lower classes in the United States
   a. include about half of all the people in the country.
   b. include salespeople, clerks, and owners of small businesses.
   c. are typically conservative.
   d. are referred to as the "silent majority."

5. Most political conservatives belong to the
   a. upper-lower class.
   b. lower-middle class.
   c. upper-middle class.
   d. upper-upper class.

6. Life chances refer to an individual's opportunity to
   a. rise in social class.
   b. fulfill his or her potential.
   c. provide a better life for his or her children.
   d. survive with dignity.

Inferences

7. John Travolta probably belongs to the
   a. lower-middle class.
   b. upper-middle class.
   c. upper-middle, newly rich class.
   d. upper-upper class.

8. The class system in the United States probably
   - a. has changed since colonial days.
   - b. will change in the future.
   - c. is different in different parts of the country.
   - d. all of the above.

9. Your social mobility is likely to be greatest if your father is a
   - a. factory worker.
   - b. plumber.
   - c. salesman.
   - d. movie star.

10. The author is probably a
   - a. sociologist or an anthropologist.
   - b. psychologist or an educator.
   - c. historian or a political scientist.
   - d. economist or a statistician.

ESSAY TEST QUESTIONS

1. Support the argument that the class system in the United States is not as open as our national mythology pretends.

2. Give examples supporting the statement that a social class is also a subculture.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **stratum** (239)
   - a. class
   - b. group
   - c. layer
   - d. system

2. **frugality** (240)
   - a. extravagance
   - b. glamour
   - c. thriftiness
   - d. poverty

3. **authoritarian** (241)
   - a. defiant
   - b. unemployed
   - c. authority-oriented
   - d. liberal

4. **obscures** (242)
   - a. defines
   - b. overlooks
   - c. ignores
   - d. makes unclear

5. **negate** (242)
   - a. justify
   - b. increase
   - c. encourage
   - d. nullify

Read this article. Write your starting time here: ________.

31

How We Listen to Music

Aaron Copland

WE ALL LISTEN TO music according to our separate capacities. But, for the sake of analysis, the whole listening process may become clearer if we break it up into its component parts, so to speak. In a certain sense we all listen to music on three separate planes. For lack of a better terminology, one might name these: (1) the sensuous plane, (2) the expressive plane, (3) the sheerly musical plane. The only advantage to be gained from mechanically splitting up the listening process into these hypothetical planes is the clearer view to be had of the way in which we listen.

The simplest way of listening to music is to listen for the sheer pleasure of the musical sound itself. That is the sensuous plane. It is the plane on which we hear music without thinking, without considering it in any way. One turns on the radio while doing something else and absent-mindedly bathes in the sound. A kind of brainless but attractive state of mind is engendered by the mere sound appeal of the music.

You may be sitting in a room reading this book. Imagine one note struck on the piano. Immediately that one note is enough to change the atmosphere of the room—proving that the sound element in music is a powerful and mysterious agent, which it would be foolish to deride or belittle.

The surprising thing is that many people who consider themselves qualified music lovers abuse that plane in listening. They go to concerts in order to lose themselves. They use music as a consolation or an escape. They enter an ideal world where one doesn't have to think of the realities of everyday life. Of course they aren't thinking about the music either. Music allows them to leave it, and they go off to a place to dream, dreaming because of and apropos of the music yet never quite listening to it.

Yes, the sound appeal of music is a potent and primitive force, but you must not allow it to usurp a disproportionate share of your interest. The sensuous plane is an important one in music, a very important one, but it does not constitute the whole story.

Aaron Copland, "How We Listen to Music," in *What to Listen for in Music,* Chapter 4. Copyright © 1957 by McGraw-Hill, Inc.

There is no need to digress further on the sensuous plane. Its appeal to every normal human being is self-evident. There is, however, such a thing as becoming more sensitive to the different kinds of sound stuff as used by various composers. For all composers do not use that sound stuff in the same way. Don't get the idea that the value of music is commensurate with its sensuous appeal or that the loveliest sounding music is made by the greatest composer. If that were so, Ravel would be a greater creator than Beethoven. The point is that the sound element varies with each composer, that his usage of sound forms an integral part of his style and must be taken into account when listening. The reader can see, therefore, that a more conscious approach is valuable even on this primary plane of music listening.

The second plane on which music exists is what I have called the expressive one. Here, immediately, we tread on controversial ground. Composers have a way of shying away from any discussion of music's expressive side. Did not Stravinsky himself proclaim that his music was an "object," a "thing," with a life of its own, and with no other meaning than its own purely musical existence? This intransigent attitude of Stravinsky's may be due to the fact that so many people have tried to read different meanings into so many pieces. Heaven knows it is difficult enough to say precisely what it is that a piece of music means, to say it definitely, to say it finally so that everyone is satisfied with your explanation. But that should not lead one to the other extreme of denying to music the right to be "expressive."

My own belief is that all music has an expressive power, some more and some less, but that all music has a certain meaning behind the notes and that that meaning behind the notes constitutes, after all, what the piece is saying, what the piece is about. This whole problem can be stated quite simply by asking, "Is there a meaning to music?" My answer to that would be, "Yes." And "Can you state in so many words what the meaning is?" My answer to that would be, "No." Therein lies the difficulty.

Simple-minded souls will never be satisfied with the answer to the second of these questions. They always want music to have a meaning, and the more concrete it is the better they like it. The more the music reminds them of a train, a storm, a funeral, or any other familiar conception the more expressive it appears to be to them. This popular idea of music's meaning—stimulated and abetted by the usual run of musical commentator—should be discouraged wherever and whenever it is met. One timid lady once confessed to me that she suspected something seriously lacking in her appreciation of music because of her inability to connect it with anything definite. That is getting the whole thing backward, of course.

Still, the question remains, How close should the intelligent music lover wish to come to pinning a definite meaning to any particular work? No closer than a general concept, I should say. Music expresses, at different moments, serenity or exuberance, regret or triumph, fury or delight. It expresses each of these moods, and many others, in a numberless variety of subtle shadings and differences. It may even express a state of meaning for which there exists no adequate word in any language. In that case, musicians often like to say that it has only a purely musical meaning. They sometimes go farther and say that *all* music has only a purely musical meaning. What they really mean is that no appropriate word can be found to express the music's meaning and that, even if it could, they do not feel the need of finding it.

But whatever the professional musician may hold, most musical novices still search for specific words with which to pin down their musical reactions. That is why they always find Tschaikovsky easier to "understand" than Beethoven. In the first place, it is easier to pin a meaning-word on a Tschaikovsky piece than on a Beethoven one. Much easier. Moreover, with the Russian composer, every time you come back to a piece of his it almost always says the same thing to you, whereas with Beethoven it is often quite difficult to put your finger right on what he is saying. And any musician will tell you that that is why Beethoven is the greater composer. Because music which always says the same thing to you will necessarily soon become dull music, but music whose meaning is slightly different with each hearing has a greater chance of remaining alive.

Listen, if you can, to the forty-eight fugue themes of Bach's *Well Tempered Clavichord.* Listen to each theme, one after another. You will soon realize that each theme mirrors a different world of feeling. You will also soon realize that the more beautiful a theme seems to you the harder it is to find any word that will describe it to your complete satisfaction. Yes, you will certainly know whether it is a gay theme or a sad one. You will be able, in other words, in your own mind, to draw a frame of emotional feeling around your theme. Now study the sad one a little closer. Try to pin down the exact quality of its sadness. Is it pessimistically sad or resignedly sad; is it fatefully sad or smilingly sad?

Let us suppose that you are fortunate and can describe to your own satisfaction in so many words the exact meaning of your chosen theme. There is still no guarantee that anyone else will be satisfied. Nor need they be. The important thing is that each one feel for himself the specific expressive quality of a theme or, similarly, an entire piece of music. And if it is a great work of art, don't expect it to mean exactly the same thing to you each time you return to it.

Themes or pieces need not express only one emotion, of course. Take such a theme as the first main one of the *Ninth Symphony,* for example. It is clearly made up of different elements. It does not say only one thing. Yet anyone hearing it immediately gets a feeling of strength, a feeling of power. It isn't a power that comes simply because the theme is played loudly. It is a power inherent in the theme itself. The extraordinary strength and vigor of the theme results in the listener's receiving an impression that a forceful statement has been made. But one should never try to boil it down to "the fateful hammer of life," etc. That is where the trouble begins. The musician, in his exasperation, says it means nothing but the notes themselves, whereas the nonprofessional is only too anxious to hang on to any explanation that gives him the illusion of getting closer to the music's meaning.

Now, perhaps, the reader will know better what I mean when I say that music does have an expressive meaning but that we cannot say in so many words what that meaning is.

The third plane on which music exists is the sheerly musical plane. Besides the pleasurable sound of music and the expressive feeling that it gives off, music does exist in terms of the notes themselves and of their manipulation. Most listeners are not sufficiently conscious of this third plane. It will be largely the business of this book to make them more aware of music on this plane.

Professional musicians, on the other hand, are, if anything, too conscious of the mere notes themselves. They often fall into the error of becoming so engrossed with their arpeggios and staccatos that they forget the deeper aspects of the music they are performing. But from the layman's standpoint, it is not so much a matter of getting over bad habits on the sheerly musical plane as of increasing one's awareness of what is going on, insofar as the notes are concerned.

When the man in the street listens to the "notes themselves" with any degree of concentration, he is most likely to make some mention of the melody. Either he hears a pretty melody or he does not, and he generally lets it go at that. Rhythm is likely to gain his attention next, particularly if it seems exciting. But harmony and tone color are generally taken for granted, if they are thought of consciously at all. As for music's having a definite form of some kind, that idea seems never to have occurred to him.

It is very important for all of us to become more alive to music on its sheerly musical plane. After all, an actual musical material is being used. The intelligent listener must be prepared to increase his awareness of the musical material and what happens to it. He must hear the melodies, the rhythms, the harmonies, the tone colors in a more conscious fashion. But above all he must, in order to follow the line of the composer's thought, know something of the principles of musical form. Listening to all of these elements is listening on the sheerly musical plane.

Let me repeat that I have split up mechanically the three separate planes on which we listen merely for the sake of greater clarity. Actually, we never listen on one or the other of these planes. What we do is to correlate them—listening in all three ways at the same time. It takes no mental effort, for we do it instinctively.

Perhaps an analogy with what happens to us when we visit the theater will make this instinctive correlation clearer. In the theater, you are aware of the actors and actresses, costumes and sets, sounds and movements. All these give one the sense that the theater is a pleasant place to be in. They constitute the sensuous plane in our theatrical reactions.

The expressive plane in the theater would be derived from the feeling that you get from what is happening on the stage. You are moved to pity, excitement, or gayety. It is this general feeling, generated aside from the particular words being spoken, a certain emotional something which exists on the stage, that is analogous to the expressive quality in music.

The plot and plot development is equivalent to our sheerly musical plane. The playwright creates and develops a character in just the same way that a composer creates and develops a theme. According to the degree of your awareness of the way in which the artist in either field handles his material you will become a more intelligent listener.

It is easy enough to see that the theatergoer never is conscious of any of these elements separately. He is aware of them all at the same time. The same is true of music listening. We simultaneously and without thinking listen on all three planes.

In a sense, the ideal listener is both inside and outside the music at the same moment, judging it and enjoying it, wishing it would go one way and watching it go another—almost like the composer at the moment he composes it; because in order to write his music, the composer must also be inside and outside his music, carried away by it and yet coldly critical of it. A subjective and objective attitude is implied in both creating and listening to music.

What the reader should strive for, then, is a more *active* kind of listening. Whether you listen to Mozart or Duke Ellington, you can deepen your understanding of music only by being a more conscious and aware listener—not someone who is just listening, but someone who is listening *for* something.

2500 words

Write your ending time here: ____________________

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Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. types of music.
   b. improving listening ability.
   c. how people should listen to music.
   d. composer Aaron Copland.

2. The main idea of the article is that
   a. Aaron Copland writes good music because he understands the art.
   b. we listen to music on different planes.
   c. most people are poor listeners.
   d. listening can be improved.

Details

3. Which of the "three planes of listening" is most commonly indulged in?
   a. the sensuous plane
   b. the expressive plane
   c. the musical plane
   d. all of the above, depending on the music

4. Which plane concerns itself with the meaning in music?
   a. the sensuous plane
   b. the expressive plane
   c. the musical plane
   d. all of the above, depending on the music

5. Who will be unsatisfied with Copland's statement that you cannot state the meaning of a piece in so many words?
   a. composers
   b. simple-minded listeners
   c. musicians
   d. practically everyone, including Copland

6. Which plane is the one Copland discusses most in the book from which this article is taken?
   a. the sensuous plane
   b. the expressive plane
   c. the musical plane
   d. all are discussed, with equal emphasis

Inferences

7. From this article you can infer that
   a. most people are good listeners.
   b. Copland disapproves of the way music critics criticize compositions.
   c. Copland believes that most people do not listen to music effectively.
   d. Copland thinks modern composers are not appreciated as much as classical ones.

8. From the article you can infer that
   a. people who listen to music on a sensuous plane enjoy the music more than those who listen on an expressive plane.
   b. when you listen to music on several planes at the same time, you lose the meaning.
   c. people interpret music differently.
   d. musicians and composers don't really enjoy listening to music.

9. Copland probably wrote this book for
   a. young composers.
   b. music critics.
   c. the average person.
   d. expert composers and musicians.

10. When a composer writes music, he probably is most concerned with
    a. the sensuous plane insofar as it will affect his audience.
    b. the expressive plane for himself and his audience.
    c. the musical plane.
    d. all three planes equally.

ESSAY TEST QUESTIONS

1. Summarize Copland's three planes.

2. Explain why Copland divides listening into three planes.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **engendered** (245)
   a. emptied
   b. produced
   c. filled
   d. confused

2. **commensurate** (246)
   a. at odds
   b. equal
   c. apart
   d. marginally involved

3. **integral** (246)
   a. unnecessary
   b. doubtful
   c. unique
   d. essential

4. **intransigent** (246)
   a. terrible
   b. rational
   c. puzzling
   d. uncompromising

5. **abetted** (246)
   a. increased
   b. begun
   c. stopped
   d. encouraged

Read this article. Write your starting time here: __________.

32

Orientation to Computers

Roy Ageloff and Richard Mojena

WHAT IS A COMPUTER?

A COMPUTER CAN BE defined most generally as a *device which is capable of manipulating data to achieve some task.* Given this definition, adding machines, cash registers, gasoline pumps, and electronic calculators all qualify as simple computers. The machine we usually think of as a computer, however, can be identified by four significant characteristics.

1. It's electronic.
2. It's fast.
3. It can store large amounts of data.
4. It can execute stored instructions.

Characteristics of Electronic Computers

The great speed of today's electronic computers is a direct result of miniaturization in solid-state electronics. To give you a rough idea of the speed capabilities of large electronic computers, consider the following estimates. One minute of computer time is equivalent to approximately 6700 hours of skilled labor by a person using a calculator. In other words, a person using a calculator would take one hour to accomplish what a computer can accomplish in less than one hundredth of a second. In fact, the electronic transfers within computers

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From *Applied Fortran 1977*, by Roy Ageloff and Richard Mojena. © 1981 by Wadsworth, Inc. Reprinted by permission of Wadsworth Publishing Company, Belmont, California 94002.

are so fast that computer designers use a basic unit of time equal to one billionth of a second (called a *nanosecond*)—quite a feat when you consider that the basic unit of time for us mortals is one second.

Another significant characteristic of electronic computers is their capacity to store large amounts of data and instructions for later recall. In other words, much like the human brain, the computer has "memory." For example, computers at most universities can store several million characters of data in primary storage and hundreds of millions of characters in secondary storage.

Finally, an electronic computer is differentiated from most other computing devices by its ability to store instructions in memory. By this we mean that the computer can execute a set of instructions without interference from human beings. This characteristic makes the computer efficient: it can carry on automatically while we do something else. Of course, the computer cannot completely do without us, but more about that later.

Computer Classifications

To further narrow the definition of an electronic computer, we make the following distinctions: analog versus digital computers and special-purpose versus general-purpose computers.

The **analog computer** manipulates data representing continuous physical processes such as temperature, pressure, and voltage. The fuel injection system of an automobile, for example, deals with physical processes as it regulates the fuel/air ratio in the carburetor on the basis of engine speed, temperature, and pressure; the gasoline pump converts the flow of fuel into price (dollars and cents) and volume (gallons to the nearest tenth). Not surprisingly, therefore, analog computers are used primarily to control such processes. For example, analog computers now control the production of products such as steel and gasoline, provide on-board guidance for aircraft and spacecraft, regulate the peak energy demands of large office buildings or factories, and monitor the vital life signs of patients in critical condition.

As a strict computational device, however, the analog computer lacks the precision one needs with counting. Place yourself in the role of a computer that has the task of adding the numbers 1 and 2. Your props are a ruler, pencil, paper, and a jar of beads. You might proceed with your task as follows: First, you take one bead from the jar and place it on the paper. Next, you take two beads from the jar and place them on the paper. Finally you count the number of beads you have on the paper. *Exactly* three, right? Now, be an analog computer. With pencil, paper, and ruler, draw a line 1 inch in length. Next, draw a 2-inch line at the end of the 1-inch line you drew earlier. Now measure the length of this overall line. Is your line exactly 3 inches long? Not really, only *approximately 3*—as the accuracy of your answer depends on the precision of the scale on the ruler, the steadiness of your hand, the acuteness of your eyesight, and the sharpness of your pencil point. When it comes to calculating, the counting approach based on beads is more accurate than the approach based on measurement.

You will be using the **digital computer,** which operates by counting digits. This type of computer manipulates data (numbers in our decimal system, letters in our alphabet, and special characters) by counting binary (two-state or 0–1) digits. **Hybrid computers,** which combine the features of digital and analog computers, have been designed for certain types of applications, such as the analysis of aircraft designs that are tested in wind tunnel experiments.

We have been classifying computers by how they process data, but we can also classify them according to their function. **Special-purpose computers** are designed to accomplish a single task, whereas **general-purpose computers** are designed to accept programs of instruction for carrying out different tasks. For example, one special-purpose computer has been designed strictly to do navigational calculations for ships and aircraft. The instructions for carrying out this task are built into the electronic circuitry of the machine so that the navigator simply keys in data and receives the answer. Other special-purpose computers include those used in color television sets to improve color reception; those used in PBX (Private Branch Exchange) telephones to perform various functions, such as automatic placement of a call at a preset time and simplified dialing of frequently used telephone numbers; and those used in automobiles to calculate such items as "miles of fuel left" and "time of destination," and to monitor and read out instantaneously the status of oil level, gasoline level, engine temperature, brake-lining wear, and other operating conditions.

In contrast, a general-purpose computer used by a corporation might accomplish tasks relating to the preparation of payrolls and production schedules and the analyses of financial, marketing, and engineering data all in one day. Similarly, the academic computer you are about to use might run a management simulation one minute and analyze the results of a psychology experiment the next minute, or it might even accomplish both of these tasks (and more) concurrently.

In general, compared with the special-purpose computer, the general-purpose computer has the flexibility of satisfying the needs of a variety of users, but at the expense of speed and economy. In this textbook, we focus strictly on the *electronic, digital, general-purpose computer.*

IMPACT OF THE COMPUTER

Since the first sale of an electronic computer by Remington Rand in 1951, the computer industry has grown to such an extent that by the mid-1970s it had generated over $75 billion in sales and provided at least 700,000 jobs. The computer has revolutionized the operations of many governmental agencies, private enterprises, and public institutions, and many experts agree that the computer industry is a "young child," if not still an "infant." In this section we present a brief historical sketch of the development of the computer, provide you with a sample of computer applications, and end with an assessment of the computer's impact.

Historical Sketch

Many conceptions and inventions dating back to the early nineteenth century were necessary precedents to the development of the computer. The first digital general-purpose computer was completed in 1944 when Howard Aiken at Harvard University designed the **Mark I** to generate mathematical tables. Unlike electronic computers, the Mark I was a mechanical computer that operated by a system of telephone relays, mechanized wheels, and tabulating equipment. By current standards, it was *very* large, *very* unreliable, *very* slow, and *very* limited in its scope of applications. In 1946 the team of J. W. Mauchly and J. P. Eckert, Jr., from the University of Pennsylvania, completed the first *electronic* computer. This computer was named **ENIAC,** for the intimidating title Electronic Numerical Integrator And Calculator. Essentially, **ENIAC** was an electronic version of Mark I, in which vacuum tubes replaced the function of telephone relays; this replacement resulted in an increase of computing speed by a factor of nearly 200. Commissioned by the U.S. Army, it did an incomparable job (for the times) of generating artillery trajectory tables, but weighed 30 tons, and filled a 150-square-meter room.

UNIVAC I (Universal Automatic Computer), developed by Remington (now Sperry) Rand in 1951, was the first commercial computer. Unlike its predecessors, it computed using binary arithmetic and allowed the storage of instructions in internal computer memory. During this **first-generation** period computers were developed by RCA, Philco, GE, Burroughs, Honeywell, NCR, and IBM. The first computer to achieve dominance in the industry was the IBM 650, which became the commercial leader during the period 1954–1959. These first-generation machines used vacuum tubes, required air conditioning, had relatively small amounts of internal memory, and were slow by today's standards.

Subsequent generations of computers resulted in dramatic reductions in *size* and relative *cost* and increases in *speed, reliability,* and the capacity for *storage.* **Second-generation** computers during the period 1959–1965 replaced the vacuum tubes of the first-generation computers with transistors. The most widely used second-generation computers were the IBM 1620, the IBM 1401, and the IBM 7094.

The **third-generation** computers (1965–1970) that followed made use of the emerging field of microelectronics (miniaturized circuits), which increased the packing densities of transistorized circuits by a factor of 100. The third-generation computers were more reliable, faster, and more sophisticated than earlier computers. They also had the ability to handle several programs concurrently (multiprogramming), resulting in a more efficient use of the computer. The most prominent family of computers in this generation was the IBM System/360.

During the 1970s, a series of refinements and improvements to third-generation machines were marketed. These computers utilized large-scale integrated circuitry (LSI) and other microminiaturization features, resulting in further reductions in size and power requirements as compared with earlier computers.

Another significant development in the 1970s was the use of small (in physical size and memory capacity), inexpensive, yet powerful computers referred to as **minicomputers** and **microcomputers.** The use of minicomputers is common in small to medium companies, colleges, hospitals, governmental agencies, and other organizations. In the past decade many organizations have decentralized their computer processing activities by implementing what is called **distributed processing,** whereby a network of computers links together geographically remote locations. A typical configuration is a minicomputer at each location for either local processing tasks or communication to a large central computer for major processing tasks.

Microcomputers, which are smaller than minicomputers, currently are marketed by consumer retail outlets such as Radio Shack. Today's desk-top microcomputers are 20 times faster, have larger memory, are thousands of times more reliable, consume the power of a light bulb rather than a locomotive, occupy one 30,000th of the volume and cost one 10,000th ($500 versus $5 million) as much as the massive first-generation machines that filled an entire room. Their use in small organizations and homes is expected to increase dramatically in the next decade.

1800 words

Write your ending time here: ____________________________

Subtract your starting time: ____________________________

Total time: ____

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. the history of computers.
   b. an overview of computers.
   c. classifications of computers.
   d. the impact of computers.

2. The main idea is that
   a. it is important to understand computers.
   b. computers will take over the world.
   c. there are two main types of computers: analog and digital.
   d. computers have had a fascinating history.

Details

3. The basic unit of computer time is a
   a. googolplex.
   b. millisecond.
   c. nanosecond.
   d. microsecond.

4. Computer storage capacity is compared to a
   a. library.
   b. human brain.
   c. think tank.
   d. huge warehouse.

5. A general-purpose computer would be used to
   a. prepare a company's payroll.
   b. improve television color reception.
   c. automatically redial a telephone number.
   d. read out an automobile's oil level.

6. Computers were invented in the
   a. 1930s.
   b. 1940s.
   c. 1950s.
   d. 1960s.

Inferences

7. Decentralization implies that in the future more people may be working
   - a. for government.
   - b. for industry.
   - c. in offices.
   - d. at home.

8. The cheapest computer is likely to be a
   - a. main frame computer.
   - b. minicomputer.
   - c. microcomputer.
   - d. UNIVAC.

9. The history of computers implies that computers
   - a. are no longer changing rapidly.
   - b. will continue to get smaller but will also be less powerful.
   - c. will become smaller and more powerful.
   - d. will do none of the above.

10. Computers will probably
    - a. become more expensive, because of inflation.
    - b. require more energy to run.
    - c. run on solar energy in the next year or two.
    - d. become cheaper.

ESSAY TEST QUESTIONS

1. Classify the two types of computers according to their method of data processing.

2. Trace the historical development of computers.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **concurrently** (255)
   a. randomly
   b. accidentally
   c. simultaneously
   d. rarely

2. **precedents** (256)
   a. forerunners
   b. descendants
   c. parts
   d. ideas

3. **trajectory** (256)
   a. catalogue
   b. size
   c. flight-path
   d. mathematical

4. **implementing** (257)
   a. stopping
   b. enacting
   c. delaying
   d. planning

5. **configuration** (257)
   a. computer
   b. cost
   c. code
   d. arrangement

Read this article. Write your starting time here: ________.

33

Bureaucracy and Politics

Thomas R. Dye and L. Harmon Zeigler

THE WASHINGTON BUREAUCRACY: SOURCES OF POWER

THE POLITICAL STRUGGLES in the White House and Congress are generally much more visible than the struggles that take place in the labyrinths of government bureaucracies. But the "faceless bureaucrats" are just as powerful in making public policy as the president, the Congress, or the courts.

Political battles do not end with victory or defeat in Congress or the White House. The site of the battles merely shifts from the recognized political arena to an administrative arena. Organized interests do not abandon the fight and return home simply because a law has been passed and signed by the president or money appropriated by Congress. They merely shift their attention to the implementation of the law and the spending of the money by a bureaucracy. We may think that "political" questions are decided by the president and Congress and "administrative" questions by the bureaucracies. But actually political and administrative questions do not differ in content. They differ only in who decides them.

The Washington bureaucracy is a major base of power in society—largely independent of Congress, the president, the courts, or the people themselves. There are over 2 million civilian employees of the federal government. (There are only 2 million people in the nation's armed forces.) The *Federal Register*, which lists all of the regulations issued annually by federal bureaucracies, exceeds 60,000 pages a year. Americans are forced to submit over 2 billion forms and documents to the federal government each year. But it is not the red tape, the paper shuffling, the waste and inefficiency, the impersonality and insensitivity, and the overregulation that make bureaucracy a powerful force in American life. What, then, are the sources of power of the Washington bureaucracy?

Thomas R. Dye and L. Harmon Zeigler, "Bureaucracy and Politics," in *American Politics in the Media Age* (Monterey, California: Brooks/Cole Publishing Co., 1983), pp. 338–349. Reprinted by permission.

Growth of Technology

The power of bureaucracies grows with advances in technology and increases in the size and complexity of society. The influence of the "technocrats" is expanding in both the corporate and governmental sectors of society. In government it is unrealistic to believe that a president or Congress has the time, energy, or expertise to master the details of nuclear power, air quality control, communications, or aviation. So actual governance of these complex fields is turned over to specialized bureaucracies, acting under only vague and general directions from the president and Congress. The Nuclear Regulatory Commission, for example, was established to draw up specific rules to oversee the nuclear power industry. The Environmental Protection Agency was given authority to define and measure pollutants and to require industries to install controls. The Occupational Safety and Health Administration issues mountains of regulations to industries on everything from toilets to ladders. The Federal Communications Commission licenses radio and television stations and allots them specific broadcast bands and power allowances. And the Federal Aviation Administration oversees air traffic controls at commercial airports.

There are approximately 2,000 federal agencies with rule-making powers. These bureaucracies announce *twenty* rules or regulations for every *one* law of Congress.

Abdication by Congress and President

Another reason for the increased power of the Washington bureaucracy is that Congress and the president often pass and sign deliberately vague and ambiguous laws. These laws are passed for largely *symbolic* reasons—ensuring nuclear safety, protecting the environment, ensuring occupational safety, allocating broadcasting channels, guaranteeing flight safety, and so on. Bureaucracies, acting under the authority of these symbolic laws, are given the power to decide what will actually be done. Congress and the President frequently do not want to take responsibility for unpopular policies. It is much easier for political leaders to blame the bureaucrats and pretend that unpopular policies are a product of an "ungovernable" Washington bureaucracy. This delegation of authority allows the imposition of regulations for which an elected president and Congress do not wish to accept full responsibility. (Perhaps the best-known example of bureaucratic power originating from vague, symbolic phrases in legislation is the affirmative-action program of the Equal Employment Opportunity Commission.)

Policy Initiation

The Washington bureaucracy itself is now sufficiently large to have its own laws passed. Bureaucrats are the most frequent lobbyists in Congress. They recommend that their agencies expand in size, acquire greater authority, and obtain more money. The bureaucracy is self-perpetuating.

Political scientist James Q. Wilson writes: "I am impressed by the extent to which policy making is dominated by the representatives of these bureaucracies and professions having a material stake in the management and funding of the intended policy and by those political staffs who see in a new program a chance for publicity, advancement, and a good reputation for their superiors."

ORGANIZATION OF THE BUREAUCRACY

All governments—federal, state, and local—collectively spend about 35 percent of the gross national product (GNP), the sum of all of the goods and services produced in the nation. The national government alone accounts for about 21 percent of the GNP, and state and local governments account for an additional 14 percent. About 16 million people work in federal, state, or local government; this is about 16 percent of the nation's total employment. In other words, about one in six employed people work for government.

The executive branch employs 98 percent of the 2 million federal employees. This branch is organized into thirteen departments, fifty-six independent agencies, and a large executive office of the president.

We frequently refer to "the Washington bureaucracy," but only about 12 percent of all federal employees work in Washington. Nonetheless, Washington is the center of control of the giant apparatus that we call the federal government.

Executive Office

The **Office of Management and Budget** (OMB), one of ten divisions of the executive office, is one of the most important agencies in Washington. Its function is to prepare the budget of the U.S. government for the president to submit to Congress. No money may be spent by the federal government without appropriations by Congress, and all requests for congressional appropriations must be cleared through OMB, a requirement that gives it great power over the executive branch. Since all agencies request more money than they can receive, the primary responsibility for reducing budget requests rests with OMB. It reviews, reduces and approves estimates submitted by departments and agencies (subject, of course, to their appeal to the president), and it also continuously scrutinizes the organization and operations of executive agencies so that changes promoting efficiency and economy can be recommended. Like members of the White House staff, the top officials of OMB are responsible solely to the president, and they are supposed to reflect the president's goals and priorities in their decisions.

The **Council of Economic Advisers,** created by the Employment Act of 1946, is composed of three professional economists of high standing appointed by the president with the consent of the Senate. The functions of the council are to analyze trends in the economy and to recommend to the president the fiscal and monetary policies necessary to avoid both depression and inflation. In addition, the council prepares the economic report that the Employment Act requires the president to submit to Congress each year. The economic report and the annual budget message to Congress give the president the opportunity to present broadly the administration's major policies.

The **National Security Council** resembles a cabinet; it is composed of the president as chairman, the vice-president, the secretary of state, the secretary of defense, and the director of the Office of Emergency Planning (a minor unit in the executive office). The chairman of the Joint Chiefs of Staff and the director of the CIA are advisors to the Security Council. The staff of the council is headed by a special assistant to the president for national security affairs. The purposes of the council are to advise the president on security policy and to coordinate foreign, military, and domestic policies. However, presidents do not rely exclusively on the council for direction in major foreign and military decisions.

Cabinet Departments

Cabinet officers in the United States are powerful because they sit at the head of a giant administrative organization. The secretary of state, the secretary of defense, the secretary of the treasury, the attorney general, and, to a lesser extent, the other departmental secretaries are all people of power and prestige. But the cabinet, as a council, rarely makes policy. Seldom do strong presidents hold a cabinet meeting to decide important policy questions. More frequently, they know what they want and are inclined to hold cabinet meetings to help them sell their views.

The Department of Health and Human Services spends more money than any other Washington bureaucracy. Indeed, this department alone accounts for over one-third of all federal spending. Its principal operating components are the Office of Human Development Services (research, planning, and development for the aged, children, youth, families, and social service programs); the U.S. Public Health

Service (medical research, health statistics, disease control, alcohol and drug abuse, mental health programs, and the activities of the Food and Drug Administration); the Health Care Financing Administration (Medicare, Medicaid); and the Social Security Administration (Social Security, Supplemental Security Income, and Aid to Families with Dependent Children, or AFDC). In addition to these operating agencies, there is a wide variety of supporting bureaucrats and mini-bureaucracies.

Independent Agencies

Independent agencies, functioning outside of the thirteen cabinet departments, regulate much of American society. The regulatory agencies involve themselves in almost everything Americans do. Bank accounts are insured by the Federal Deposit Insurance Commission. Interest rates on loans are determined largely by the Federal Reserve Board. Unions are protected by the National Labor Relations Board. Safety in automobiles and buses is the responsibility of the National Transportation Safety Board. The Federal Trade Commission orders cigarette manufacturers to place a health warning on each pack. The Equal Employment Opportunity Commission investigates complaints about racial or sexual discrimination in jobs. The Consumer Product Safety Commission requires that toys be large enough that they cannot be swallowed. The Federal Communications Commission does not allow cigarette advertisements on television. The Environmental Protection Agency requires automobile companies to reduce exhaust emissions. The Occupational Safety and Health Administration requires construction firms to place portable toilets at work sites. The list goes on and on. Indeed, it is difficult to find an activity in public or private life that is *not* regulated by government.

Federal regulatory agencies make rules, investigate violations, adjudicate responsibility, and levy fines and penalties. They are legislature, investigator, prosecutor, judge, and jury all in one. The only appeal from their decisions is to the federal courts, and the agencies win most of the cases brought against them. Most of the independent regulatory agencies are governed by a small commission appointed by the president, with Senate confirmation, for a fixed term. During this term the commissioners cannot be fired by the president. Hence, they are considered "independent."

The capture theory. But are members of regulatory commissions really independent? Over the years many of the older commissions have worked to protect and preserve the regulated industry rather than the general public. A **"capture theory"** of regulatory agencies argues that over time the original stimulus for reform that led to the agency's creation diminishes and the agency becomes closely identified with the well-being of the industry it is supposed to regulate. Agency bureaucrats are frequently recruited from regulated industries because of their expertise. Moreover, after a few years in government, some agency bureaucrats go to work in high-paying jobs in the regulated industries. For example, many regulatory commissions attract young attorneys, fresh from prominent law schools, to their staffs. When these attorneys learn to do their job well, they are frequently offered high-paying positions by the industries they are regulating. The "best and the brightest" are siphoned off by industry to become its defenders. And, of course, these people have already learned the intricacies of government regulations, with their training having been paid for by the taxpayers.

Federal consultants. The Washington bureaucracy extends even beyond official agencies and employees of the federal government to include an estimated 6 million to 10 million people working indirectly for the federal government as contractors or consultants. Many of these people are working in the defense industry. However, the *Washington Post* has estimated that the federal government spends about $10 billion annually for outside consultants. These consultants receive over 10,000 contracts a year, usually to do work that bureaucracies are unable or unwilling to do.

1900 words

Write your ending time here: ______________________

Subtract your starting time: ______________________

Total time: ______________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. the White House's influence on bureaucracy.
   b. the function of bureaucracy in government.
   c. the effects of technology on bureaucracy.
   d. government in the United States.

2. The main idea of the article is that
   a. the White House tries to influence bureaucracy.
   b. bureaucracy in the United States is powerful.
   c. technology has revolutionized bureaucracy.
   d. most people hate government bureaucracy.

Details

3. The Environmental Protection Agency
   a. collects fees for the state parks.
   b. can require a company to meet smog standards.
   c. can license radio and television stations.
   d. regulates the number of airplanes allowed to fly to one city in one day.

4. The federal government employs
   a. ⅛ of the population.
   b. 50,000 people.
   c. only bureaucrats.
   d. two million civilians.

5. State, federal, and local governments employ
   a. ⅙ of the work force.
   b. fewer people than the military.
   c. people just to provide jobs and keep people off welfare.
   d. more people than the private sector.

6. The bureau that spends the most money is the
   a. Nuclear Regulatory Commission.
   b. Department of Health and Human Services.
   c. Occupational Safety and Health Commission.
   d. National Security Council.

Inferences

7. Advances in technology and the complexity of society have caused
   a. politicians to work longer hours.
   b. politicians to take more vacations.
   c. advisory bureaus such as the Nuclear Regulatory Commission to be established.
   d. a greater need for elected officials.

8. Even after a law is passed, a bureaucracy can still exercise power over it by
   a. not doing anything about it.
   b. overseeing how it is carried out.
   c. returning the bill to Congress because it cannot be enforced.
   d. getting the President to veto the bill.

9. Regulatory agencies have
   a. become less influential in recent years.
   b. outlived their usefulness and are no longer necessary.
   c. tended to keep growing.
   d. shown that there is no need for private industry to protect the environment.

10. The ''capture theory'' argues that
   a. Congress will always control the regulatory commissions.
   b. money is always available if needed to ''capture'' new products for military use.
   c. people from regulatory agencies often leave government to work for the industry they were supposed to regulate.
   d. a regulatory agency is capable of remaining neutral and exercising direct control over industry.

ESSAY TEST QUESTIONS

1. Explain the reasons for the increased power of the Washington bureaucracy.

2. Explain the capture theory of regulatory agencies.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **labyrinths** (264)
   a. levels
   b. mazes
   c. headquarters
   d. buildings

2. **appropriated** (264)
   a. allotted
   b. charged
   c. cheated
   d. printed

3. **scrutinizes** (266)
   a. ignores
   b. carefully examines
   c. quickly reviews
   d. draws

4. **adjudicate** (268)
   a. create
   b. accept
   c. judge
   d. avoid

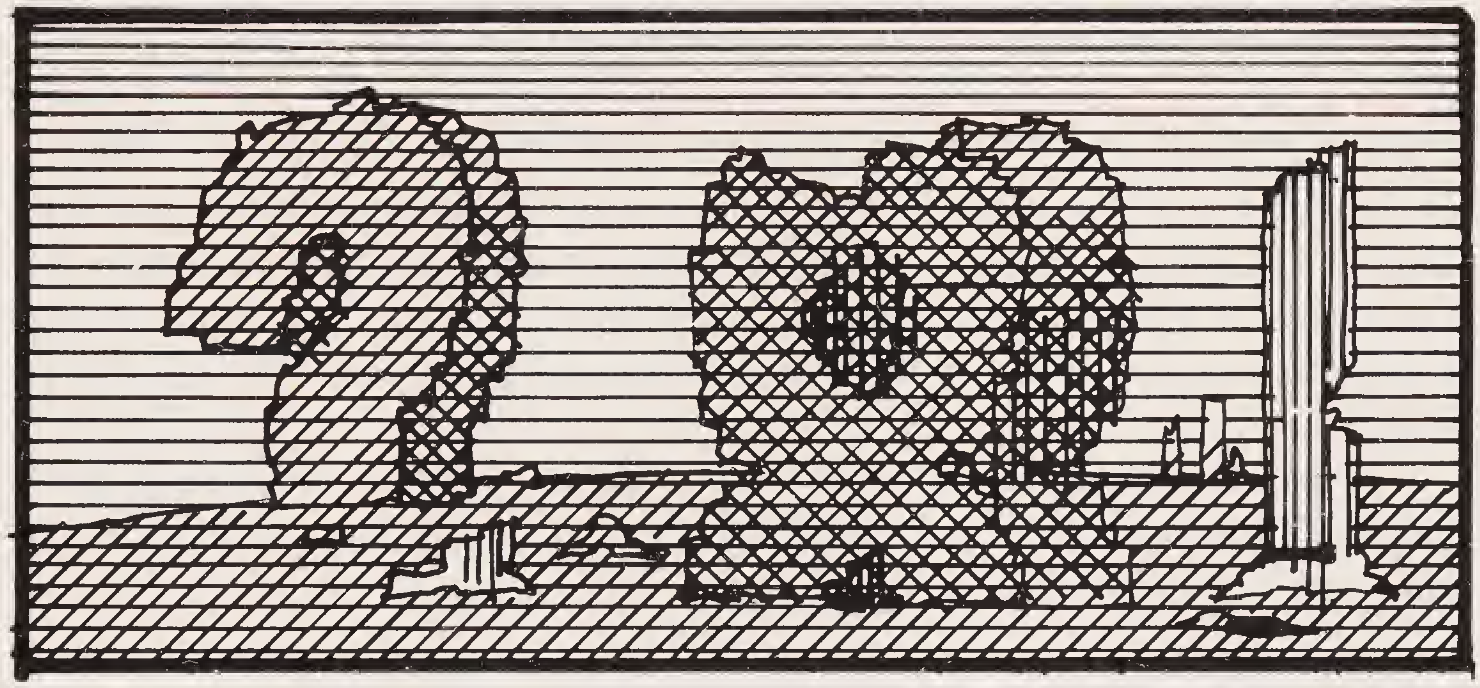
5. **intricacies** (269)
   a. complexities
   b. rules
   c. sources
   d. simplicities

Read this article. Write your starting time here: ________.

34

Early Numeration Systems

Karl J. Smith



A NUMERATION SYSTEM IS a set of basic symbols and some rules for making other symbols from them, the purpose of the whole game being the identification of numbers. The invention of a precise and "workable" system is one of the greatest inventions of humanity. It is certainly equal to the invention of the alphabet, which enabled humans to carry the knowledge of one generation to the next. It is simple for us to use the symbol 17 to represent this many objects:

xxxxx xxxxx
xxxxx xx

However, it took us centuries to arrive at this stage of symbolic representation. It wasn't the first and probably won't be the last numeration system to be developed. Here are some of the ways that 17 has been written:

Tally	𝍸 |||| |||| ||
Egyptian	∩ |||||||
Roman	XVII
Mayan	$\overset{\cdot\cdot}{\equiv}$
Linguistic	seventeen *siebzehn* *dix-sept*

Karl J. Smith, "Early Numeration Systems," in *The Nature of Modern Mathematics*, Third Edition (Monterey, California: Brooks/Cole Publishing Co., 1980), pp. 204–216. Reprinted by permission.

The concept represented by each of these symbols is the same, but the symbols differ. The concept or idea of "seventeenness" is called a *number*; the symbol used to represent the concept is called a *numeral*. The difference between *number* and *numeral* is analogous to the difference between a person and his or her name.

Two of the earliest civilizations known to use numerals were the Egyptian and Babylonian. We shall examine these systems for two reasons. First, it will help us more fully to understand our own numeration (decimal) system; second, it will help us to see how the ideas of these other systems have been incorporated into our system.

THE EGYPTIAN NUMERATION SYSTEM

Perhaps the earliest type of written numeration system developed was that of a *simple grouping system*. The Egyptians used such a system by the time of the first dynasty, around 2850 B.C. The symbols of the Egyptian system were part of their hieroglyphics and are shown in Table 1.

Any number is expressed by using these symbols additively; each symbol is repeated the required number of times, but with no more than nine repetitions.

Table 1. Egyptian Hieroglyphic Numerals

Our numeral (decimal)	Egyptian numeral	Descriptive name
1	𓏺	Stroke
10	𓎆	Heel bone
100	𓍢	Scroll
1000	𓆼	Lotus flower
10,000	𓂭	Pointing finger
100,000	𓆐	Polliwog
1,000,000	𓁨	Astonished man

EXAMPLE: 12,345 = 𓂭𓆼𓆼𓍢𓍢𓍢𓎆𓎆𓎆𓎆𓏺𓏺𓏺𓏺𓏺

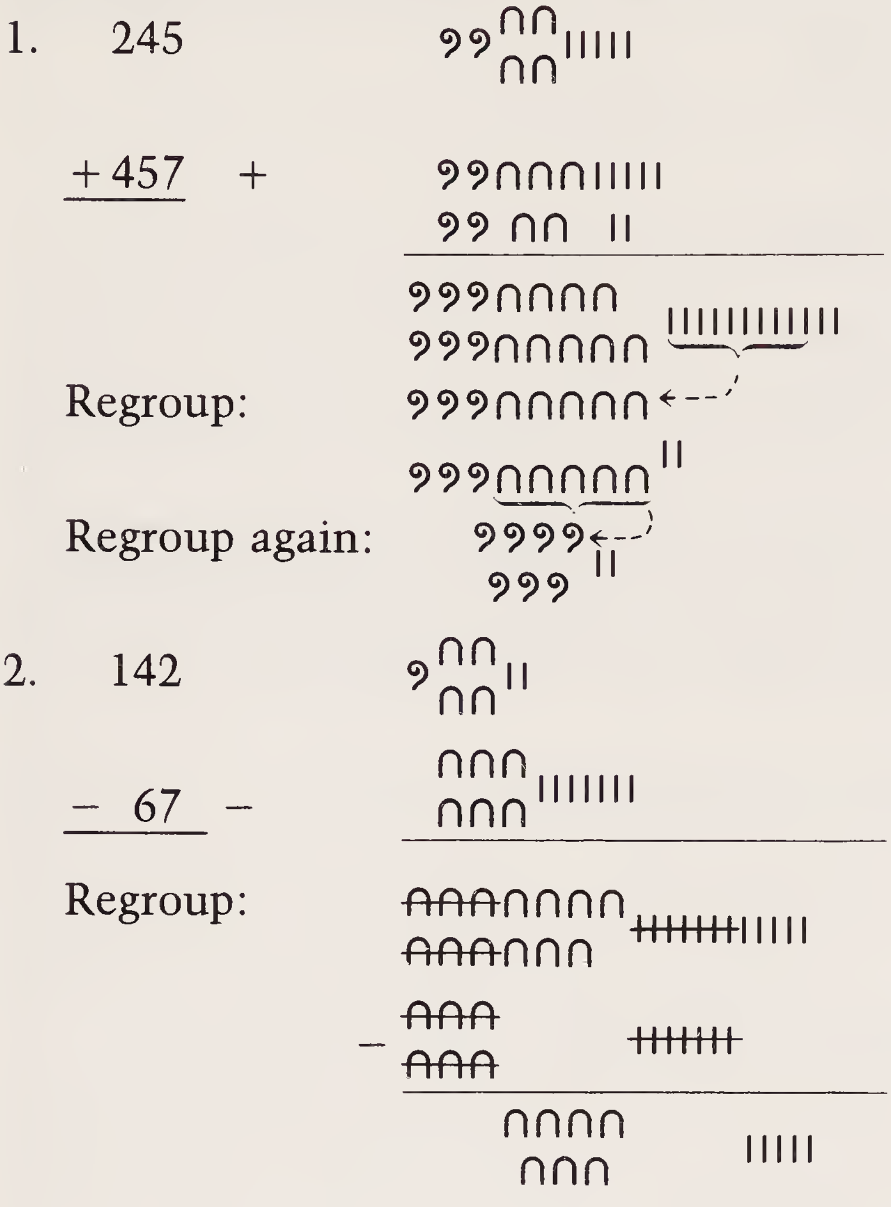
The position of the individual symbols is not important. That is,

𓂭𓆼𓆼𓍢𓍢𓍢𓎆𓎆𓎆𓎆𓏺𓏺𓏺𓏺𓏺 = 𓆼𓆼𓍢𓍢𓍢𓂭𓎆𓎆𓎆𓎆𓏺𓏺𓏺𓏺𓏺

= 𓏺𓏺𓏺𓏺𓏺𓂭𓆼𓍢𓍢𓎆𓎆𓎆𓎆𓆼𓍢

The Egyptians had a simple repetitive-type arithmetic. Addition and subtraction were performed by repeating the symbols and by regrouping:

EXAMPLES:



Multiplication and division were performed by successions of additions that did not require the memorization of a multiplication table and could easily be done on an abacus-type device.

The Egyptians also used unit fractions (1/*n*) in their computations. These were indicated by placing the symbol ⬭ over the numeral for the denominator. Thus

$$\overset{\bigcirc}{\text{III}} = 1/3$$

THE BABYLONIAN NUMERATION SYSTEM

The Babylonian numeration system differed from the Egyptian in several respects. Whereas the Egyptian system was a simple grouping system, the Babylonians employed a much more useful *positional system.* Since they lacked papyrus, they used mostly clay as a writing medium, and thus the Babylonian cuneiform was much less pictorial than the Egyptian system. They employed only two wedge-shaped characters, which date from 2000 B.C. and are shown in Table 2.

Notice from the table that, for numbers 1 through 59, the system is repetitive. However, unlike in the Egyptian system, the position of

Table 2. Babylonian Cuneiform Numerals

Our numeral (decimal)	Babylonian numeral
1	𒁹
2	𒁹𒁹
9	𒁹𒁹𒁹𒁹𒁹𒁹𒁹𒁹𒁹
10	𒌋
59	𒌋𒌋𒌋𒁹𒁹𒁹𒁹𒁹 𒌋𒌋 𒁹𒁹𒁹𒁹

the symbols was important. The 𒌋 *must* appear to the left of any 𒁹 s to represent numbers smaller than 60. For numbers larger than 60, the symbols 𒌋 and 𒁹 are to the left of 𒌋, and any symbols to the left of the 𒌋 have a value 60 times their original value. That is,

𒁹𒌋𒌋𒌋𒁹𒁹𒁹𒁹𒁹 means $(1 \times 60) + 35$.

EXAMPLES:

1. 𒁹𒁹𒁹𒌋 𒌋𒌋𒌋𒌋𒁹𒁹𒁹𒁹𒁹𒁹𒁹𒁹𒁹 $= (3 \times 60) + 59 = 239$

2. 𒁹𒁹𒁹𒁹𒁹𒌋𒁹 $= (5 \times 60) + 11 = 311$

3. 𒌋𒌋𒁹𒁹𒁹𒌋𒁹𒁹𒁹𒁹𒁹𒁹 $= (23 \times 60) + 16 = 1396$

This system is called a *sexagesimal system* and uses the principle of position. However, the system is not fully positional, since only numbers larger than 60 use the position principle; numbers within each basic 60-group are written by a simple grouping system. A true positional sexagesimal system would require 60 different symbols.

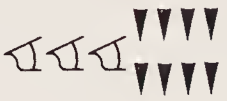
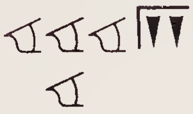
The Babylonians carried their positional system a step further. If any numbers were to the left of the second 60-group, they had the value of 60×60 or 60^2. Thus

𒁹𒁹𒌋𒌋𒌋𒌋𒁹𒁹𒁹𒁹𒁹𒌋𒌋𒁹𒁹𒁹𒁹 $= (2 \times 60^2) + (45 \times 60) + 24$

$= 7200 + 2700 + 24$

$= 9924$

The Babylonians also made use of a subtractive symbol, Γ . That is, 38 could be written


or


Although this positional numeration system was in many ways superior to the Egyptian system, it suffered from the lack of a zero or placeholder symbol. For example, how is the number 60 represented? Does ΥΥ mean 2 or 61? (Scholars tell us that such ambiguity can be resolved only by a careful study of the context.) However, in later Babylonia, around 300 B.C., records show that there is a zero symbol, ≤ , and this idea was later used by the Hindus.

Arithmetic with the Babylonian numerals is quite simple, since there are only two symbols. A study of the Babylonian arithmetic will be left for the student.

HINDU-ARABIC NUMERATION SYSTEM

The numeration system in common use today has ten symbols, the digits 0,1,2,3,4,5,6,7,8, and 9. The selection of ten digits was no doubt a result of our having ten fingers (digits).

The symbols originated in India in about 300 B.C. However, because the early specimens do not contain a zero or use a positional system, this numeration system offered no advantage over other systems then in use in India.

The date of the invention of the zero symbol is not known. The symbol did not originate in India but probably came from the late Babylonian period via the Greek world.

By the year 750 A.D. the zero symbol and the idea of a positional system had been brought to Baghdad and translated into Arabic. We are not certain how these numerals were introduced into Europe, but they likely came via Spain in the 8th century. Gerbert, who later became Pope Sylvester II, studied in Spain and was the first European scholar known to have taught these numerals. Because of their origins, these numerals are called *Hindu-Arabic numerals.* Since ten basic symbols are used, the Hindu-Arabic numeration system is also called the *decimal numeration system*, from the Latin word *decem*, meaning "ten."

Although we now know that the decimal system is very efficient, its introduction met with considerable controversy. Two opposing factions, the "algorists" and the "abacists," arose. Those favoring the Hindu-Arabic system were called algorists, since the symbols were introduced into Europe in a book called (in Latin) *Liber Algorismi de Numero Indorum,* by the Arab mathematician Al-Khwarizmi. The word *algorismi* is the origin of our word *algorism*. The abacists favored the status quo—using Roman numerals and doing arithmetic on an abacus. The battle between the abacists and the algorists lasted for 400 years. The Roman church exerted great influence in commerce, science, and theology. Roman numerals were easy to write and learn, and addition and subtraction with them were easier than with the "new" Hindu-Arabic "heathen" numerals. It seems incredible that our decimal system has been in general use only since about the year 1500.

Let's examine the Hindu-Arabic or decimal numeration system a little more closely.

1. It uses 10 symbols, called digits: 0,1,2,3,4,5,6,7,8, and 9.
2. Larger numbers are expressed in terms of powers of 10.
3. It is positional.
4. It is additive.

Now let's review how we count objects.

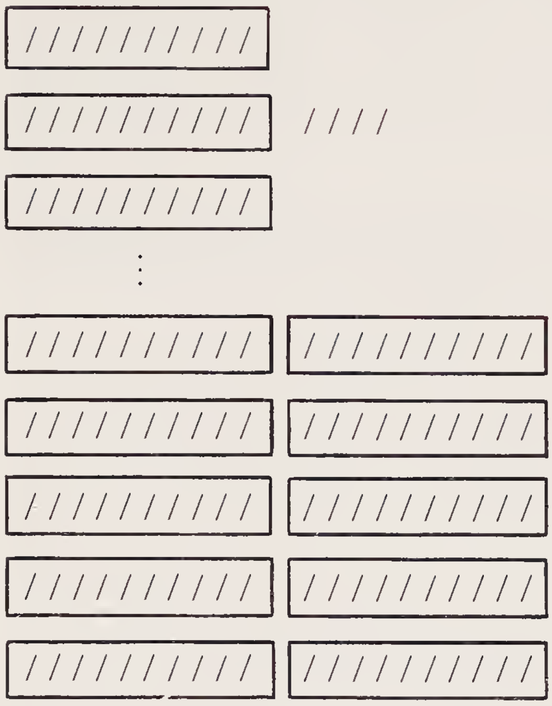
/	1
//	2
///	3
////	4
/////	5
//////	6
///////	7
////////	8
/////////	9

At this point we could invent another symbol, as the Egyptians did, or we could reuse the digit symbols by repeating them or by altering their position. That is, 10 will mean 1 group of $\boxed{//////////}$. The symbol 0 was invented as a placeholder to show that the 1 here is in a different position from the 1 representing the /.

$\boxed{//////////}$ / 11 This means 1 group of $\boxed{//////////}$ and 1 extra.

$\boxed{//////////}$ // 12 This means 1 group and 2 extra.

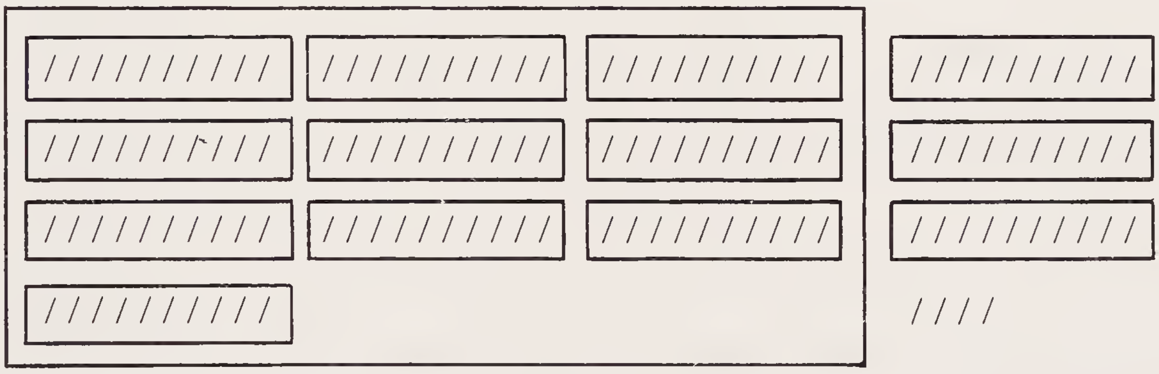
⋮ ⋮



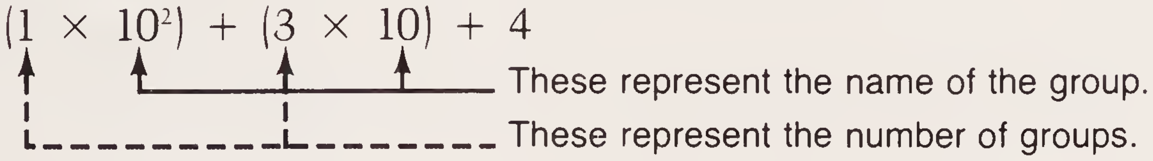
34 This means 3 groups (let's call each group a "ten") and 4 extra.

In the last instance we have a group of groups, or ten groups (or ten-tens, if you like). Let's call this group of groups a "$10 \cdot 10$" or "10^2" or a "hundred." We again use position and repeat the symbol 1 with a still different meaning: 100.

Thus, what does 134 represent? It means we have the following:



We could denote this more simply by writing:



$$(1 \times 10^2) + (3 \times 10) + 4$$

These represent the name of the group.
These represent the number of groups.

This leads us to the name

one hundred, three tens, four ones,

which is read "one hundred thirty-four." A number written in this fashion is in *expanded notation.* As we pointed out earlier, mathematicians often look for patterns; so we notice that the expanded notation for 31,452 suggests a pattern:

$$(3 \times 10^4) + (1 \times 10^3) + (4 \times 10^2) + (5 \times 10) + 2$$

We write $10 = 10^1$ and $1 = 10^0$. Recall that we defined $10^0 = 1$. Then the pattern is complete:

$$(3 \times 10^4) + (1 \times 10^3) + (4 = 10^2) + (5 \times 10^1) + (2 \times 10^0)$$

A period, called a *decimal point* in the decimal system, is used to separate the fractional parts from the whole parts.

For example,

$$\begin{aligned} {}^1\!/\!_{10} &= 10^{-1} \\ {}^1\!/\!_{100} &= 10^{-2} \\ {}^1\!/\!_{1000} &= 10^{-3}\text{, since } 10^{-3} = {}^1\!/\!_{10^3} = {}^1\!/\!_{10 \cdot 10 \cdot 10} = {}^1\!/\!_{1000} \end{aligned}$$

Recall that 10 is called the *base*. Notice the pattern of the exponents on the base.

We often fail to see all the great ideas that are incorporated into this system, and it is difficult to understand the problems inherent in developing a numeration system.

1600 words

Write your ending time here: ______________________________

Subtract your starting time: ______________________________

Total time: ______________________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. early alphabets.
   b. great inventions of humanity.
   c. the Egyptian numeration system.
   d. the history of numeration systems.

2. The main idea of the article is that
   a. early alphabets preceded numeration systems.
   b. early numeration systems were not very useful.
   c. different cultures have different numeration systems.
   d. numeration systems evolve over time.

Details

3. The first people to have a zero-type symbol were the
   a. Egyptians.
   b. Hindus.
   c. Babylonians.
   d. Arabians.

4. The Egyptian system did not have
   a. fractions.
   b. multiplication.
   c. division.
   d. decimals.

5. Which culture is not mentioned as having a unique number system?
   a. the Romans
   b. the Greeks
   c. the Mayans
   d. the Arabians

6. The Babylonian system was an advancement over the Egyptian system because it
   a. was a more useful positional system.
   b. was a simple grouping system.
   c. had easier symbols to draw.
   d. had more symbols.

Inferences

7. We can infer from the article that
   a. most numerical systems are based on ten symbols.
   b. a system without a zero cannot function.
   c. probably all pre-Babylonian numerical systems were based on grouping.
   d. our present system evolved from the Egyptians.

8. We can infer from the article that a future numbering system would probably
   a. be positional rather than based on grouping.
   b. have some of the symbols now used.
   c. take centuries to invent.
   d. not be positional.

9. From the article we can infer that all systems
   a. use multiplication tables.
   b. develop symbols that have religious overtones.
   c. need to have clear representational systems.
   d. have fractions.

10. From the article we can infer that an abacus can best be used with a system that is based on
   a. positions.
   b. groupings.
   c. multiplication.
   d. multiple symbols.

ESSAY TEST QUESTIONS

1. Describe the Hindu-Arabic numeration system.

2. List the major milestones in the development of numeration systems.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **cuneiform** (273)
   a. religious
   b. tool-using
   c. consisting of symbols
   d. thinking

2. **via** (275)
   a. in spite of
   b. by way of
   c. along
   d. avoiding

3. **factions** (275)
   a. governments
   b. ideas
   c. number systems
   d. small groups

4. **algorists** (275)
   a. users of Roman numerals
   b. inventors of the Hindu-Arabic system
   c. favorers of the Hindu-Arabic system
   d. favorers of the status quo

5. **status quo** (276)
   a. past
   b. present
   c. birth
   d. future

UNIT III: FICTION

Reading Fiction

Fiction is imaginative literature. It may be based on real events, but much of it is created by the author. Its purpose is to give pleasure and sometimes to give us a deeper understanding of the world. Novels, short stories, and plays are the common types of fiction. This part of the book includes five short stories and one excerpt from the anthropological novel, *The Teachings of Don Juan*.

The elements of fiction include plot, theme, characterization, setting, and style.

Plot is the action, or the "story." Some types of fiction are read almost entirely for plot: westerns, detective stories, and romances, for example. They are action-packed and entertaining, but essentially shallow.

The "meaning" of a piece of fiction is its theme. A theme is a message about life that is stated or implied in the story. Some themes are more important than others: some stories hit you over the head with trite moralizing, whereas others offer profound insights that can change your life.

Characterization is another element of fiction. Characters can range from being superficial and stereotyped to being well-rounded and complex. What the characters say and do furthers the plot and contributes to the theme.

The setting in a piece of fiction is the environment in which the story unfolds: a place and time, and possibly a mood. For example, in a horror story, the setting might be a forbidding castle in Transylvania at midnight. Setting should advance the plot, the theme, and the characterization. In some types of fiction, setting is particularly important; for example, an author writing a science fiction story that takes place on Mars might have to spend a great deal of time revealing Martian geography and/or culture.

The final element of fiction is style. Style refers to the author's manner of writing, of putting thoughts into words. Style is inseparable from the writer's personality; for example, some writers use short, clipped sentences, and some use long, flowery ones. But style should also reflect the personalities of the characters, be true to the setting, and advance the plot and theme. This interaction of plot, theme, characterization, setting, and style is the art of fiction.

REASONS TO READ FICTION

You have probably inferred that fiction can be read for several different reasons. Some of them are:

1. Enjoyment or relaxation
2. To gain an understanding of our own and other cultures and of other periods of history
3. To have vicarious experiences
4. For aesthetic appreciation of the art of literature
5. To provide models to improve one's own writing style
6. For literary analysis or to compare one writer's style with that of another

SPEED READING AND FICTION

The first three reasons for reading fiction can be accomplished, for the most part, through speed reading techniques already described in the first part of the book. The question you must ask is whether a light treatment of the material, such as that offered through speed reading, will fulfill your purpose. If not, you may choose to modify your approach and slow your speed somewhat.

The last three purposes for reading fiction cannot be served by speed reading. Appreciation, evaluation, and analysis all require time for reflection and sometimes require more than one reading.

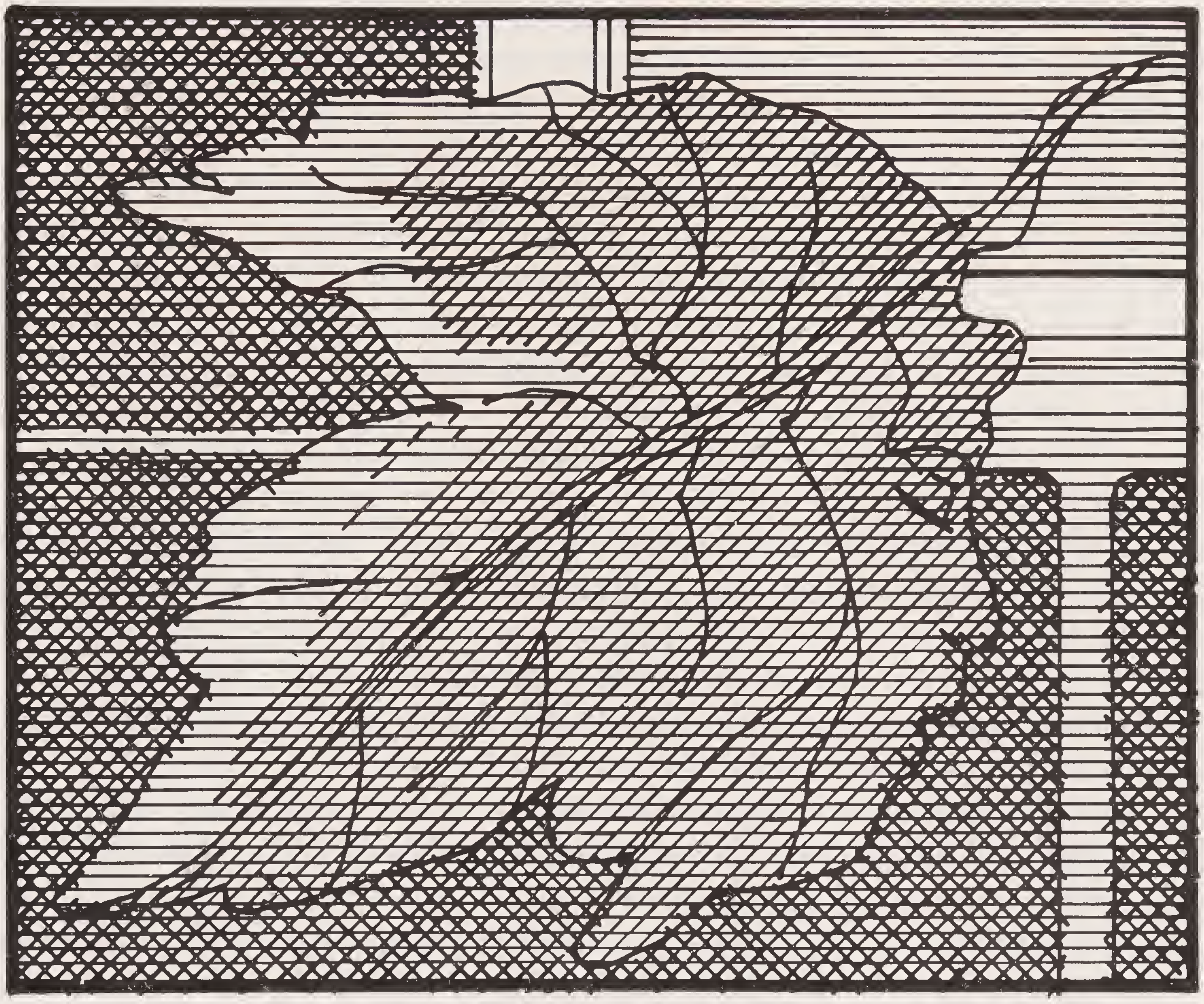
Therefore, when reading fiction, as when reading nonfiction, the reader must determine his or her purpose for reading and adapt techniques accordingly.

Read this article. Write your starting time here: ________.

35

The Last Leaf

O. Henry



In a little district west of Washington Square the streets have run crazy and broken themselves into small strips called "places." These "places" make strange angles and curves. One street crosses itself a time or two. An artist once discovered a valuable possibility in this street. Suppose a collector with a bill for paints, paper and canvas should, in traversing this route, suddenly meet himself coming back, without a cent having been paid on account!

So, to quaint old Greenwich Village the art people soon came prowling, hunting for north windows and eighteenth-century gables

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O. Henry, "The Last Leaf," from *The Complete Works of O. Henry*. Copyright 1905 by Doubleday and Company, Inc. Reprinted by permission of the publisher.

and Dutch attics and low rents. Then they imported some pewter mugs and a chafing dish or two from Sixth Avenue, and became a "colony."

At the top of a squatty, three-story brick Sue and Johnsy had their studio. "Johnsy" was familiar for Joanna. One was from Maine; the other from California. They had met at the *table d'hôte* of an Eighth Street "Delmonico's," and found their tastes in art, chicory salad and bishop sleeves so congenial that the joint studio resulted.

That was in May. In November a cold, unseen stranger, whom the doctors called Pneumonia, stalked about the colony, touching one here and there with his icy fingers. Over on the east side this ravager strode boldly, smiting his victims by scores, but his feet trod slowly through the maze of the narrow and moss-grown "places."

Mr. Pneumonia was not what you would call a chivalric old gentleman. A mite of a little woman with blood thinned by California zephyrs was hardly fair game for the red-fisted, short-breathed old duffer. But Johnsy he smote; and she lay, scarcely moving, on her painted iron bedstead, looking through the small Dutch window-panes at the blank side of the next brick house.

One morning the busy doctor invited Sue into the hallway with a shaggy, gray eyebrow.

"She has one chance in—let us say, ten," he said, as he shook down the mercury in his clinical thermometer. "And that chance is for her to want to live. This way people have of lining up on the side of the undertaker makes the entire pharmacopoeia look silly. Your little lady has made up her mind that she's not going to get well. Has she anything on her mind?"

"She—she wanted to paint the Bay of Naples some day," said Sue.

"Paint?—bosh? Has she anything on her mind worth thinking about twice—a man, for instance?"

"A man?" said Sue, with a jew's-harp twang in her voice. "Is a man worth—but, no, doctor; there is nothing of the kind."

"Well, it is the weakness, then," said the doctor. "I will do all that science, so far as it may filter through my efforts, can accomplish. But whenever my patient begins to count the carriages in her funeral procession I subtract 50 per cent from the curative power of medicines. If you will get her to ask one question about the new winter styles in cloak sleeves I will promise you a one-in-five chance for her, instead of one in ten."

After the doctor had gone Sue went into the workroom and cried a Japanese napkin to a pulp. Then she swaggered into Johnsy's room with her drawing board, whistling ragtime.

Johnsy lay, scarcely making a ripple under the bedclothes, with her face toward the window. Sue stopped whistling, thinking she was asleep.

She arranged her board and began a pen-and-ink drawing to illustrate a magazine story. Young artists must pave their way to Art by drawing pictures for magazine stories that young authors write to pave their way to Literature.

As Sue was sketching a pair of elegant horseshow riding trousers and a monocle on the figure of the hero, an Idaho cowboy, she heard a low sound, several times repeated. She went quickly to the bedside.

Johnsy's eyes were open wide. She was looking out the window and counting—counting backward.

"Twelve," she said, and a little later "eleven"; and then "ten," and "nine"; and then "eight" and "seven," almost together.

She looked solicitously out of the window. What was there to count? There was only a bare, dreary yard to be seen, and the blank side of the brick house twenty feet away. An old, old, ivy vine, gnarled and decayed at the roots, climbed half way up the brick wall. The cold breath of autumn had stricken its leaves from the vine until its skeleton branches clung, almost bare, to the crumbling bricks.

"What is it, dear?" asked Sue.

"Six," said Johnsy, in almost a whisper. "They're falling faster now. Three days ago there were almost a hundred. It made my head ache to count them. But now it's easy. There goes another one. There are only five left now."

"Five what, dear. Tell your Sudie."

"Leaves. On the ivy vine. When the last one falls I must go, too. I've known that for three days. Didn't the doctor tell you?"

"Oh, I never heard of such nonsense," complained Sue, with magnificent scorn. "What have old ivy leaves to do with your getting well? And you used to love that vine, so, you naughty girl. Don't be a goosey. Why, the doctor told me this morning that your chances for getting well real soon were—let's see exactly what he said—he said the chances were ten to one! Why, that's almost as good a chance as we have in New York when we ride on the street cars or walk past a new building. Try to take some broth now, and let Sudie go back to her drawing, so she can sell the editor man with it, and buy port wine for her sick child, and pork chops for her greedy self."

"You needn't get any more wine," said Johnsy, keeping her eyes fixed out the window. "There goes another. No, I don't want any broth. That leaves just four. I want to see the last one fall before it gets dark. Then I'll go, too."

"Johnsy, dear," said Sue, bending over her, "will you promise me to keep your eyes closed, and not look out the window until I am done working? I must hand those drawings in by tomorrow. I need the light, or I would draw the shade soon."

"Couldn't you draw in the other room?" asked Johnsy, coldly.

"I'd rather be here by you," said Sue. "Besides, I don't want you to keep looking at those silly ivy leaves."

"Tell me as soon as you have finished," said Johnsy, closing her eyes, and lying white and still as a fallen statue, "because I want to see the last one fall. I'm tired of waiting. I'm tired of thinking. I want to turn loose my hold on everything, and go sailing down, down, just like one of those poor, tired leaves."

"Try to sleep," said Sue. "I must call Behrman up to be my model for the old hermit miner. I'll not be gone a minute. Don't try to move 'til I come back."

Old Behrman was a painter who lived on the ground floor beneath them. He was past sixty and had a Michael Angelo's Moses beard curling down from the head of a satyr along the body of an imp. Behrman was a failure in art. Forty years he had wielded the brush without getting near enough to touch the hem of his Mistress's robe. He had been always about to paint a masterpiece, but had never yet begun it. For several years he had painted nothing except now and then a daub in the line of commerce or advertising. He earned a little by serving as a model to those young artists in the colony who could not pay the price of a professional. He drank gin to excess, and still talked of his coming masterpiece. For the rest he was a fierce little old man, who scoffed terribly at softness in any one, and who regarded himself as especial mastiff-in-waiting to protect the two young artists in the studio above.

Sue found Behrman smelling strongly of juniper berries in his dimly lighted den below. In one corner was a blank canvas on an easel that had been waiting there for twenty-five years to receive the first line of the masterpiece. She told him of Johnsy's fancy, and how she feared she would, indeed, light and fragile as a leaf herself, float away, when her slight hold upon the world grew weaker.

Old Behrman, with his red eyes plainly streaming shouted his contempt and derision for such idiotic imaginings.

"Vass!" he cried. "Is dere people in de world mit der foolishness to die because leafs dey drop off from a confounded vine? I haf not heard of such a thing. No, I will not bose as a model for your fool hermit-dunderhead. Vy do you allow dot silly pusiness to come in der prain of her? Ach, dot poor leetle Miss Yohnsy."

"She is very ill and weak," said Sue, "and the fever has left her mind morbid and full of strange fancies. Very well, Mr. Behrman, if you do not care to pose for me, you needn't. But I think you are a horrid old—old flibbertigibbet."

"You are just like a woman!" yelled Behrman. "Who said I will not bose? Go on. I come mit you. For half an hour I haf peen trying to say dot I am ready to bose. Gott! dis is not any blace in which one so good as Miss Johnsy shall lie sick. Some day I vill baint a masterpiece, and ve shall all go away. Gott! yes."

Johnsy was sleeping when they went upstairs. Sue pulled the shade down to the window-sill, and motioned Behrman into the other room. In there they peered out the window fearfully at the ivy vine. Then they looked at each other for a moment without speaking. A persistent, cold rain was falling, mingled with snow. Behrman, in his old blue shirt, took his seat as the hermit-miner on an upturned kettle for a rock.

When Sue awoke from an hour's sleep the next morning she found Johnsy with dull, wide-open eyes staring at the drawn green shade.

"Pull it up; I want to see," she ordered, in a whisper.

Wearily Sue obeyed.

But, lo! after the beating rain and fierce gusts of wind that had endured through the livelong night, there yet stood out against the brick wall one ivy leaf. It was the last one on the vine. Still dark green near its stem, but with its serrated edges tinted with the yellow of dissolution and decay, it hung bravely from a branch some twenty feet above the ground.

"It is the last one," said Johnsy, "I thought it would surely fall during the night. I heard the wind. It will fall to-day, and I shall die at the same time."

"Dear, dear!" said Sue, leaning her worn face down to the pillow, "think of me, if you won't think of yourself? What would I do?"

But Johnsy did not answer. The lonesomest thing in all the world is a soul when it is making ready to go on its mysterious, far journey. The fancy seemed to possess her more strongly as one by one the ties that bound her to friendship and to earth were loosed.

The day wore away, and even through the twilight they could see the lone ivy leaf clinging to its stem against the wall. And then, with the coming of the night the north wind was again loosed, while the rain still beat against the windows and pattered down from the low Dutch eaves.

When it was light enough Johnsy, the merciless, commanded that the shade be raised.

The ivy leaf was still there.

Johnsy lay for a long time looking at it. And then she called to Sue, who was stirring her chicken broth over the gas stove.

"I've been a bad girl, Sudie," said Johnsy. "Something has made that last leaf stay there to show me how wicked I was. It is a sin to want to die. You may bring me a little broth now, and some milk with a little port in it, and—no; bring me a hand-mirror first, and then pack some pillows about me, and I will sit up and watch you cook."

An hour later she said.

"Sudie, some day I hope to paint the Bay of Naples."

The doctor came in the afternoon, and Sue had an excuse to go into the hallway as he left.

"Even chances," said the doctor, taking Sue's thin, shaking hand in his. "With good nursing you'll win. And now I must see another case I have downstairs. Behrman, his name is—some kind of an artist, I believe. Pneumonia, too. He is an old, weak man, and the attack is acute. There is no hope for him; but he goes to the hospital to-day to be made more comfortable."

The next day the doctor said to Sue: "She's out of danger. You've won. Nutrition and care now—that's all."

And that afternoon Sue came to the bed where Johnsy lay, contentedly knitting a very blue and very useless woollen shoulder scarf, and put one arm around her, pillows and all.

"I have something to tell you, white mouse," she said. "Mr. Behrman died of pneumonia to-day in the hospital. He was ill only two days. The janitor found him on the morning of the first day in his room downstairs helpless with pain. His shoes and clothing were wet through and icy cold. They couldn't imagine where he had been on such a dreadful night. And then they found a lantern, still lighted, and a ladder that had been dragged from its place, and some scattered brushes, and a palette with green and yellow colors mixed on it, and—look out the window, dear, at the last ivy leaf on the wall. Didn't you wonder why it never fluttered or moved when the wind blew? Ah, darling, it's Behrman's masterpiece—he painted it there the night that the last leaf fell."

2400 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. death.
   b. leaves.
   c. great artists.
   d. human will.

2. The main idea of the article is that
   a. nobody wants to die.
   b. most people care about each other.
   c. the human will has great power.
   d. drugs can't cure some diseases.

Details

3. The last real leaf
   a. dropped off the tree in the middle of the night.
   b. stayed on the tree throughout the terrible storm.
   c. never fell off the tree.
   d. fell off the tree just as the old man died of pneumonia.

4. Johnsy had
   a. a severe cold.
   b. a heart condition.
   c. a rare blood disease.
   d. pneumonia.

5. In the beginning of the story, the doctor gave Johnsy what chance of survival?
   a. fifty-fifty
   b. one in five
   c. one in ten
   d. no chance

6. In what month did the story take place?
   a. July
   b. November
   c. September
   d. March

Inferences

7. Old Behrman went outside because
   a. it was a beautiful night for a walk.
   b. Johnsy needed medicine.
   c. he had to get the doctor.
   d. he wanted to paint on the wall.

8. Sue probably thought that Behrman was
   a. a mean old man.
   b. a good writer.
   c. a nice old man.
   d. an old fool.

9. We can infer that Behrman's last painting was
   a. not very good.
   b. taken to an art museum.
   c. extraordinarily lifelike.
   d. done in the afternoon.

10. The author implied that old Behrman got pneumonia because he
    a. was old and weak.
    b. was out in the rain and snow at night.
    c. was near Johnsy.
    d. had been sick for many years.

CRITICAL READING QUESTIONS

1. O. Henry wrote stories with "surprise" endings. What was the surprise ending?

2. Read Johnsy's comments (for example, "I've been a bad girl, Sudie") and the description of her actions. What kind of person is she?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **traversing** (285)
   a. avoiding
   b. traveling
   c. learning
   d. walking

2. ***table d' hôte*** (286)
   a. group meal at a fixed price
   b. expensive meal
   c. main table
   d. annual party

3. **zephyrs** (286)
   a. days
   b. warm breezes
   c. cold
   d. heat

4. **pharmacopoeia** (286)
   a. medical profession
   b. education
   c. supply of drugs
   d. way of living

5. **solicitously** (287)
   a. quietly
   b. longingly
   c. quickly
   d. anxiously

Read this article. Write your starting time here: ________.

36

The Untold Lie

Sherwood Anderson

RAY PEARSON and Hal Winters were farm hands employed on a farm three miles north of Winesburg. On Saturday afternoons they came into town and wandered about through the streets with other fellows from the country.

Ray was a quiet, rather nervous man of perhaps fifty with a brown beard and shoulders rounded by too much and too hard labor. In his nature he was as unlike Hal Winters as two men can be unlike.

Ray was an altogether serious man and had a little sharp-featured wife who had also a sharp voice. The two, with half a dozen thin-legged children, lived in a tumble-down frame house beside a creek at the back end of the Wills farm where Ray was employed.

Hal Winters, his fellow employee, was a young fellow. He was not of the Ned Winters family, who were very respectable people in Winesburg, but was one of the three sons of the old man called Windpeter Winters who had a sawmill near Unionville, six miles away, and who was looked upon by everyone in Winesburg as a confirmed old reprobate.

People from the part of Northern Ohio in which Winesburg lies will remember old Windpeter by his unusual and tragic death. He got drunk one evening in town and started to drive home to Unionville along the railroad tracks. Henry Brattenburg, the butcher, who lived out that way, stopped him at the edge of the town and told him he was sure to meet the down train but Windpeter slashed at him with his whip and drove on. When the train struck and killed him and his two horses a farmer and his wife who were driving home along a nearby road saw the accident. They said that old Windpeter stood upon the seat of his wagon, raving and swearing at the onrushing locomotive, and that he fairly screamed with delight when the team, maddened by his incessant slashing at them, rushed straight ahead to certain death.

"The Untold Lie," from *Winesburg, Ohio* by Sherwood Anderson. Copyright 1919 by B. W. Heubsch. Copyright renewed 1947 by Eleanor Copenhauer Anderson. Reprinted by permission of Viking Penguin, Inc.

Boys like young George Willard and Seth Richmond will remember the incident quite vividly because, although everyone in our town said that the old man would go straight to hell and that the community was better off without him, they had a secret conviction that he knew what he was doing and admired his foolish courage. Most boys have seasons of wishing they could die gloriously instead of just being grocery clerks and going on with their humdrum lives.

But this is not the story of Windpeter Winters nor yet of his son Hal who worked on the Wills farm with Ray Pearson. It is Ray's story. It will, however, be necessary to talk a little of young Hal so that you will get into the spirit of it.

Hal was a bad one. Everyone said that. There were three of the Winters boys in that family, John, Hal, and Edward, all broad-shouldered big fellows like old Windpeter himself and all fighters and woman-chasers and generally all-around bad ones.

Hal was the worst of the lot and always up to some devilment. He once stole a load of boards from his father's mill and sold them in Winesburg. With the money he bought himself a suit of cheap, flashy clothes. Then he got drunk and when his father came raving into town to find him, they met and fought with their fists on Main Street and were arrested and put into jail together.

Hal went to work on the Wills farm because there was a country school teacher out that way who had taken his fancy. He was only twenty-two then but had already been in two or three of what were spoken of in Winesburg as "women scrapes." Everyone who heard of his infatuation for the school teacher was sure it would turn out badly. "He'll only get her into trouble, you'll see," was the word that went around.

And so these two men, Ray and Hal, were at work in a field on a day in the late October. They were husking corn and occasionally something was said and they laughed. Then came silence. Ray, who was the more sensitive and always minded things more, had chapped hands and they hurt. He put them into his coat pockets and looked away across the fields. He was in a sad, distracted mood and was affected by the beauty of the country. If you knew the Winesburg country in the fall and how the low hills are splashed with yellows and reds you would understand his feeling. He began to think of the time, long ago when he was a young fellow living with his father, then a baker in Winesburg, and how on such days he had wandered away to the woods to gather nuts, hunt rabbits, or just to loaf about and smoke his pipe. His marriage had come about through one of his days of wandering. He had induced a girl who waited on trade in his father's shop to go with him and something had happened. He was thinking of that afternoon and how it had affected his whole life when a spirit of protest awoke in him. He had forgotten about Hal and muttered words. "Tricked by Gad, that's what I was, tricked by life and made a fool of," he said in a low voice.

As though understanding his thoughts, Hal Winters spoke up. "Well, has it been worth while? What about it, eh? What about marriage and all that?" he asked and then laughed. Hal tried to keep on laughing but he too was in an earnest mood. He began to talk earnestly. "Has a fellow got to do it?" he asked. "Has he got to be harnessed up and driven through life like a horse?"

Hal didn't wait for an answer but sprang to his feet and began to walk back and forth between the corn shocks. He was getting more and more excited. Bending down suddenly he picked up an ear of the yellow corn and threw it at the fence. "I've got Nell Gunther in trouble," he said. "I'm telling you, but you keep your mouth shut."

Ray Pearson arose and stood staring. He was almost a foot shorter than Hal, and when the younger man came and put his two hands on the older man's shoulders they made a picture. There they stood in the big empty field with the quiet corn shocks standing in rows behind them and the red and yellow hills in the distance, and from being just two indifferent workmen they had become all alive to each other. Hal sensed it and because that was his way he laughed. "Well, old daddy," he said awkwardly, "come on, advise me. I've got Nell in trouble. Perhaps you've been in the same fix yourself. I know what everyone would say is the right thing to do, but what do you say? Shall I marry and settle down? Shall I put myself into the harness to be worn out like an old horse? You know me, Ray. There can't anyone break me but I can break myself. Shall I do it or shall I tell Nell to go to the devil? Come on, you tell me. Whatever you say, Ray, I'll do."

Ray couldn't answer. He shook Hal's hands loose and turning walked straight away toward the barn. He was a sensitive man and there were tears in his eyes. He knew there was only one thing to say to Hal Winters, son of old Windpeter Winters, only one thing that all his own training and all the beliefs of the people he knew would approve, but for his life he couldn't say what he knew he should say.

At half-past four that afternoon Ray was puttering about the barnyard when his wife came up the lane along the creek and called him. After the talk with Hal he hadn't returned to the cornfield but worked about the barn. He had already done the evening chores and had seen Hal, dressed and ready for a roistering night in town, come out of the farmhouse and go into the road. Along the path to his own house he trudged behind his wife, looking at the ground and thinking. He couldn't make out what was wrong. Every time he raised his eyes and saw the beauty of the country in the failing light he wanted to do something he had never done before, shout or scream or hit his wife with his fists or something equally unexpected and terrifying. Along the path he went scratching his head and trying to make it out. He looked hard at his wife's back but she seemed all right.

She only wanted him to go into town for groceries and as soon as she had told him what she wanted began to scold. "You're always puttering," she said. "Now I want you to hustle. There isn't anything in the house for supper and you've got to get to town and back in a hurry."

Ray went into his own house and took an overcoat from a hook back of the door. It was torn about the pockets and the collar was shiny. His wife went into the bedroom and presently came out with a soiled cloth in one hand and three silver dollars in the other. Somewhere in the house a child wept bitterly and a dog that had been sleeping by the stove arose and yawned. Again the wife scolded. "The children will cry and cry. Why are you always puttering?" she asked.

Ray went out of the house and climbed the fence into a field. It was just growing dark and the scene that lay before him was lovely. All the low hills were washed with color and even the little clusters of bushes in the corners by the fences were alive with beauty. The whole world seemed to Ray Pearson to have become alive with something just as he and Hal had suddenly become alive when they stood in the cornfield staring into each other's eyes.

The beauty of the country about Winesburg was too much for Ray on that fall evening. That is all there was to it. He could not stand it. Of a sudden he forgot all about being a quiet old farm hand and throwing off the torn overcoat began to run across the field. As he ran he shouted a protest against his life, against all life, against everything that makes life ugly. "There was no promise made," he cried into the empty spaces that lay about him. "I didn't promise my Minnie anything and Hal hasn't made any promise to Nell. I know he hasn't. She went into the woods with him because she wanted to go. What he wanted she wanted. Why should I pay? Why should Hal pay? Why should anyone pay? I don't want Hal to become old and worn out. I'll tell him. I won't let it go on. I'll catch Hal before he gets to town and I'll tell him."

Ray ran clumsily and once he stumbled and fell down. "I must catch Hal and tell him," he kept thinking, and although his breath came in gasps he kept running harder and harder. As he ran he thought of things that hadn't come into his mind for years—how at the time he married he had planned to go west to his uncle in Portland, Oregon—how he hadn't wanted to be a farm hand, but had thought when he got out West he would go to sea and be a sailor or get a job on a ranch and ride a horse into Western towns, shouting and laughing and waking the people in the houses with his wild cries. Then as he ran he remembered his children and in fancy felt their hands clutching at him. All of his thoughts of himself were involved with the thoughts of Hal and he thought the children were clutching at the younger man also. "They are the accidents of life, Hal," he cried. "They are not mine or yours. I had nothing to do with them."

Darkness began to spread over the fields as Ray Pearson ran on and on. His breath came in little sobs. When he came to the fence at the edge of the road and confronted Hal Winters, all dressed up and smoking a pipe as he walked jauntily along, he could not have told what he thought or what he wanted.

Ray Pearson lost his nerve and this is really the end of the story of what happened to him. It was almost dark when he got to the fence and he put his hands on the top bar and stood staring. Hal Winters jumped a ditch and coming up close to Ray put his hands into his pockets and laughed. He seemed to have lost his own sense of what had happened in the cornfield and when he put up a strong hand and took hold of the lapel of Ray's coat he shook the old man as he might have shaken a dog that misbehaved.

"You came to tell me, eh?" he said. "Well, never mind telling me anything. I'm not a coward and I've already made up my mind." He laughed again and jumped back across the ditch. "Nell ain't no fool," he said. "She didn't ask me to marry her. I want to marry her. I want to settle down and have kids."

Ray Pearson also laughed. He felt like laughing at himself and all the world.

As the form of Hal Winters disappeared in the dusk that lay over the road that led to Winesburg, he turned and walked slowly back across the fields to where he had left his torn overcoat. As he went some memory of pleasant evenings spent with the thin-legged children in the tumble-down house by the creek must have come into his mind, for he muttered words. "It's just as well. Whatever I told him would have been a lie," he said softly, and then his form also disappeared into the darkness of the fields.

2400 words

Write your ending time here: ______________________

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Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
    a. the evils of drinking.
    b. lying.
    c. the rugged life of farmhands.
    d. choices in life.

2. The main idea of the article is that
    a. men who drink have no morals.
    b. everyone lies sometimes.
    c. farm hands are never really happy.
    d. any choice we make has both good and bad consequences.

Details

3. The main character of the story is
    a. Windpeter Winters.
    b. Ray Pearson.
    c. Hal Winters.
    d. all three men.

4. In the story Ray is described as
    a. the town drunk.
    b. the son of the town drunk.
    c. a quick-tempered man.
    d. a quiet, rather nervous man.

5. Hal's father died from
    a. a heart attack.
    b. drinking.
    c. being hit by a train.
    d. old age.

6. Ray's dream was to go West to
    a. get married and have a family.
    b. become a farmer.
    c. desert his wife and children.
    d. be a sailor or rancher.

Inferences

7. From the story you can infer that the untold lie was that
    a. Ray could solve Hal's problem.
    b. Hal wanted to get married.
    c. Ray was unhappy being married.
    d. Hal's father had not died in a train accident.

8. From the story you can infer that the author feels that Ray's life was
   a. happier than most people's.
   b. unhappier than most people's.
   c. about the same as most people's.
   d. unbearable.

9. From the story you can infer that Ray
   a. was very unhappy.
   b. had mixed feelings about his life.
   c. had a lot of money.
   d. was not a good husband.

10. From the story you can infer that Hal
   a. did not like Ray.
   b. respected Ray's judgment.
   c. hated his father.
   d. was drunk the night he went to town.

CRITICAL READING QUESTIONS

1. Why is the part about Windpeter Winters included? How does it advance the plot?

2. Does Ray represent Hal's future? Why or why not?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **reprobate** (294)
   a. scoundrel
   b. hermit
   c. kind person
   d. drunk

2. **incessant** (294)
   a. periodic
   b. constant
   c. cruel
   d. gentle

3. **humdrum** (295)
   a. exciting
   b. daily
   c. wonderful
   d. dull

4. **roistering** (296)
   a. noisy
   b. quiet
   c. lonely
   d. friendly

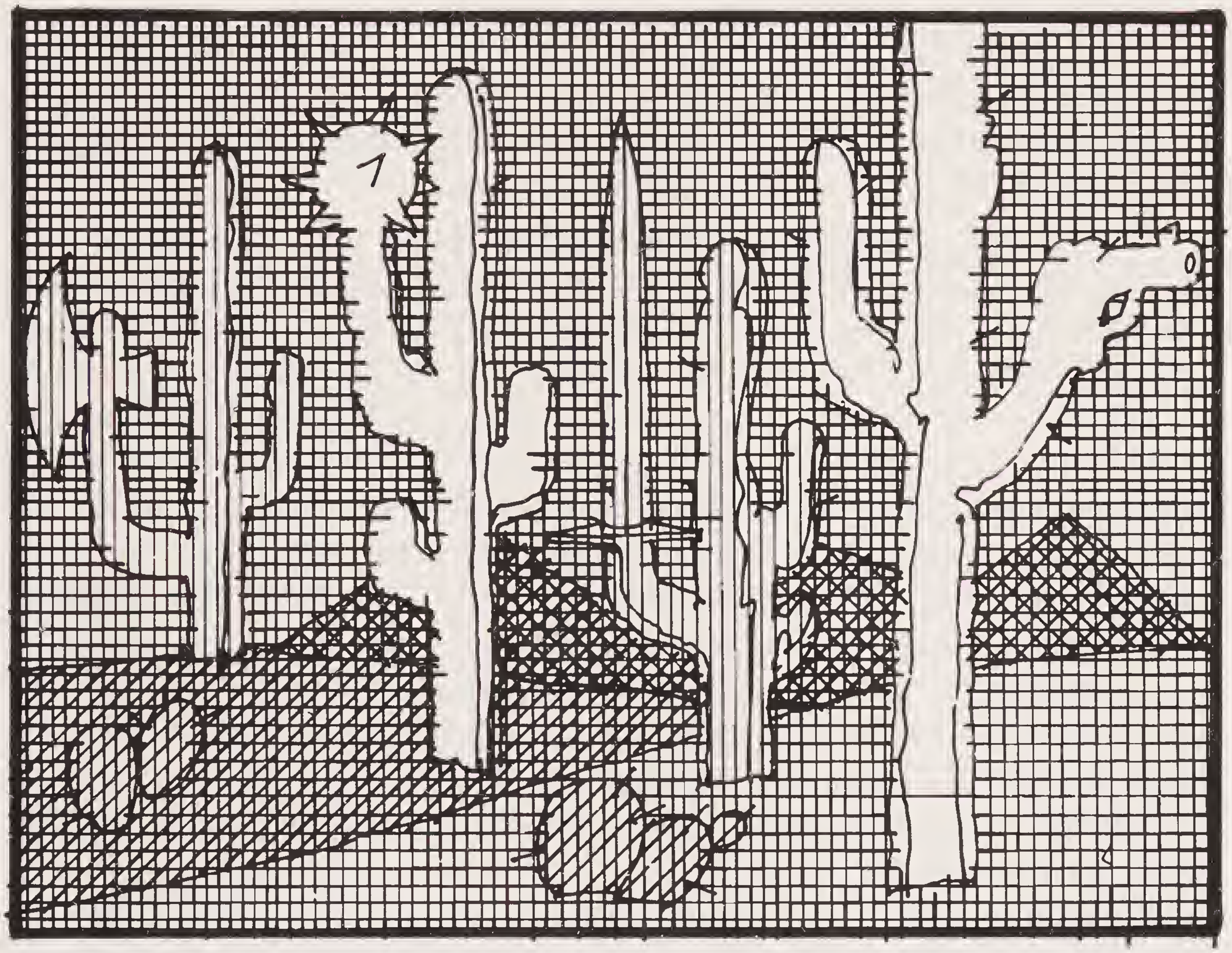
5. **jauntily** (298)
   a. sadly
   b. slowly
   c. unemotionally
   d. gaily

Read this article. Write your starting time here: ________.

37

The Teachings of Don Juan

Carlos Castaneda



SATURDAY, APRIL 8, 1962

In our conversations, don Juan consistently used or referred to the phrase "man of knowledge," but never explained what he meant by it. I asked him about it.

"A man of knowledge is one who has followed truthfully the hardships of learning," he said. "A man who has, without rushing or without faltering, gone as far as he can in unraveling the secrets of power and knowledge."

"Can anyone be a man of knowledge?"

"No, not anyone."

"Then what must a man do to become a man of knowledge?"

"He must challenge and defeat his four natural enemies."

From *The Teachings of Don Juan* by Carlos Castañeda. Berkeley: University of California Press, 1968, pp. 56–60. © 1968 The Regents of the University of California, reprinted by permission of the University of California Press.

"Will he be a man of knowledge after defeating these four enemies?"

"Yes. A man can call himself a man of knowledge only if he is capable of defeating all four of them."

"Then, can *anybody* who defeats these enemies be a man of knowledge?"

"Anybody who defeats them becomes a man of knowledge."

"But are there any special requirements a man must fulfill before fighting with these enemies?"

"No. Anyone can try to become a man of knowledge; very few men actually succeed, but that is only natural. The enemies a man encounters on the path of learning to become a man of knowledge are truly formidable; most men succumb to them."

"What kind of enemies are they, don Juan?"

He refused to talk about the enemies. He said it would be a long time before the subject would make any sense to me. I tried to keep the topic alive and asked him if he thought *I* could become a man of knowledge. He said no man could possibly tell that for sure. But I insisted on knowing if there were any clues he could use to determine whether or not I had a chance of becoming a man of knowledge. He said it would depend on my battle against the four enemies—whether I could defeat them or would be defeated by them—but it was impossible to foretell the outcome of that fight.

I asked him if he could use witchcraft or divination to see the outcome of the battle. He flatly stated that the results of the struggle could not be foreseen by any means, because becoming a man of knowledge was a temporary thing. When I asked him to explain this point, he replied:

"To be a man of knowledge has no permanence. One is never a man of knowledge, not really. Rather, one becomes a man of knowledge for a very brief instant, after defeating the four natural enemies."

"You must tell me, don Juan, what kind of enemies they are."

He did not answer. I insisted again, but he dropped the subject and started to talk about something else.

SATURDAY, APRIL 15, 1962

As I was getting ready to leave, I decided to ask him once more about the enemies of a man of knowledge. I argued that I could not return for some time, and it would be a good idea to write down what he had to say and then think about it while I was away.

He hesitated for a while, but then began to talk.

"When a man starts to learn, he is never clear about his objectives. His purpose is faulty; his intent is vague. He hopes for rewards that will never materialize, for he knows nothing of the hardships of learning.

"He slowly begins to learn—bit by bit at first, then in big chunks. And his thoughts soon clash. What he learns is never what he pictured, or imagined, and so he begins to be afraid. Learning is never what one expects. Every step of learning is a new task, and the fear the man is experiencing begins to mount mercilessly, unyielding. His purpose becomes a battlefield.

"And thus he has stumbled upon the first of his natural enemies: Fear! A terrible enemy—treacherous, and difficult to overcome. It remains concealed at every turn of the way, prowling, waiting. And if the man, terrified in its presence, runs away, his enemy will have put an end to his quest."

"What will happen to the man if he runs away in fear?"

"Nothing happens to him except that he will never learn. He will never become a man of knowledge. He will perhaps be a bully, or a harmless, scared man; at any rate, he will be a defeated man. His first enemy will have put an end to his cravings."

"And what can he do to overcome fear?"

"The answer is very simple. He must not run away. He must defy his fear, and in spite of it he must take the next step in learning, and the next, and the next. He must be fully afraid, and yet he must not stop. That is the rule! And a moment will come when his first enemy retreats. The man begins to feel sure of himself. His intent becomes stronger. Learning is no longer a terrifying task.

"When this joyful moment comes, the man can say without hesitation that he has defeated his first natural enemy."

"Does it happen at once, don Juan, or little by little?"

"It happens little by little, and yet the fear is vanquished suddenly and fast."

"But won't the man be afraid again if something new happens to him?"

"No. Once a man has vanquished fear, he is free from it for the rest of his life because, instead of fear, he has acquired clarity—a clarity of mind which erases fear. By then a man knows his desires; he knows how to satisfy those desires. He can anticipate the new steps of learning, and a sharp clarity surrounds everything. The man feels that nothing is concealed.

"And thus he has encountered his second enemy: Clarity! That clarity of mind, which is so hard to obtain, dispels fear, but also blinds.

"It forces the man never to doubt himself. It gives him the assurance he can do anything he pleases, for he sees clearly into everything. And he is courageous because he is clear, and he stops at nothing because he is clear. But all that is a mistake; it is like something incomplete. If the man yields to this make-believe power, he has succumbed to his second enemy and will fumble with learning. He will rush when he should be patient, or he will be patient when he should rush. And he will fumble with learning until he winds up incapable of learning anything more."

"What becomes of a man who is defeated in that way, don Juan? Does he die as a result?"

"No, he doesn't die. His second enemy has just stopped him cold from trying to become a man of knowledge; instead, the man may turn into a buoyant warrior, or a clown. Yet the clarity for which he has paid so dearly will never change to darkness and fear again. He will be clear as long as he lives, but he will no longer learn, or yearn for, anything."

"But what does he have to do to avoid being defeated?"

"He must do what he did with fear: he must defy his clarity and use it only to see, and wait patiently and measure carefully before taking new steps; he must think, above all, that his clarity is almost a mistake. And a moment will come when he will understand that his clarity was only a point before his eyes. And thus he will have overcome his second enemy, and will arrive at a position where nothing can harm him anymore. This will not be a mistake. It will not be only a point before his eyes. It will be true power.

"He will know at this point that the power he has been pursuing for so long is finally his. He can do with it whatever he pleases. His ally is at his command. His wish is the rule. He sees all that is around him. But he has also come across his third enemy: Power!

"Power is the strongest of all enemies. And naturally the easiest thing to do is to give in; after all, the man is truly invincible. He commands; he begins by taking calculated risks, and ends in making rules, because he is a master.

"A man at this stage hardly notices his third enemy closing in on him. And suddenly, without knowing, he will certainly have lost the battle. His enemy will have turned him into a cruel, capricious man."

"Will he lose his power?"

"No, he will never lose his clarity or his power."

"What then will distinguish him from a man of knowledge?"

"A man who is defeated by power dies without really knowing how to handle it. Power is only a burden upon his fate. Such a man has no command over himself, and cannot tell when or how to use his power."

"Is the defeat by any of these enemies a final defeat?"

"Of course it is final. Once one of these enemies overpowers a man there is nothing he can do."

"Is it possible, for instance, that the man who is defeated by power may see his error and mend his ways?"

"No. Once a man gives in he is through."

"But what if he is temporarily blinded by power, and then refuses it?"

"That means his battle is still on. That means he is still trying to become a man of knowledge. A man is defeated only when he no longer tries, and abandons himself."

"But then, don Juan, it is possible that a man may abandon himself to fear for years, but finally conquer it."

"No, that is not true. If he gives in to fear he will never conquer it, because he will shy away from learning and never try again. But if he tries to learn for years in the midst of his fear, he will eventually conquer it because he will never have really abandoned himself to it."

"How can he defeat his third enemy, don Juan?"

"He has to defy it, deliberately. He has to come to realize the power he has seemingly conquered is in reality never his. He must keep himself in line at all times, handling carefully and faithfully all that he has learned. If he can see that clarity and power, without his control over himself, are worse than mistakes, he will reach a point where everything is held in check. He will know then when and how to use his power. And thus he will have defeated his third enemy.

"The man will be, by then, at the end of his journey of learning, and almost without warning he will come upon the last of his enemies: Old age! This enemy is the cruelest of all, the one he won't be able to defeat completely, but only fight away.

"This is the time when a man has no more fears, no more impatient clarity of mind—a time when all his power is in check, but also the time when he has an unyielding desire to rest. If he gives in totally to his desire to lie down and forget, if he soothes himself in tiredness, he will have lost his last round, and his enemy will cut him down into a feeble old creature. His desire to retreat will overrule all his clarity, his power, and his knowledge.

"But if the man sloughs off his tiredness, and lives his fate through, he can then be called a man of knowledge, if only for the brief moment when he succeeds in fighting off his last, invincible enemy. That moment of clarity, power, and knowledge is enough."

2000 words

Write your ending time here: ____________________

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COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   - a. defeating one's enemies.
   - b. don Juan.
   - c. becoming a man of knowledge.
   - d. becoming a warrior.

2. The main idea is that
   - a. life is a battlefield.
   - b. most people never overcome even the first enemy.
   - c. becoming a man of knowledge is very difficult.
   - d. to become a man of knowledge, one must defeat four enemies.

Details

3. The strongest enemy is
   - a. fear.
   - b. clarity.
   - c. power.
   - d. old age.

4. Who has overcome the four enemies?
   - a. people of knowledge
   - b. people who have been initiated into don Juan's religion
   - c. warriors
   - d. everybody

5. If a man is defeated by fear, he
   - a. will never become a man of knowledge.
   - b. will die.
   - c. can still have clarity.
   - d. is worse than most people.

6. A person who has lost the battle with power is
   - a. strong but silent.
   - b. afraid.
   - c. weak.
   - d. cruel.

Inferences

7. The author implies that old people
   - a. are afraid of death.
   - b. fight death bitterly.
   - c. look forward to death.
   - d. deny that they will die.

8. The author appears to be don Juan's
   - a. student.
   - b. lover.
   - c. friend.
   - d. doctor.

9. Don Juan implies that
   - a. everyone fights four enemies.
   - b. most people surrender to the four enemies.
   - c. most of the fighting takes place in childhood.
   - d. men of knowledge never die.

10. The author implies that bullies
    - a. have been defeated by fear.
    - b. are fighting their fear.
    - c. have a problem with power.
    - d. have conquered power.

CRITICAL READING QUESTIONS

1. How is it possible to "conquer" clarity?

2. Discuss the advantages and disadvantages of the life of a man of knowledge compared to the life of an ordinary man.

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **formidable** (302)
   a. powerful
   b. good
   c. talented
   d. weak

2. **divination** (302)
   a. division
   b. religion
   c. fortune-telling
   d. trickery

3. **vanquished** (303)
   a. ignored
   b. accepted
   c. formalized
   d. conquered

4. **dispels** (303)
   a. drives away
   b. strengthens
   c. weakens
   d. expresses

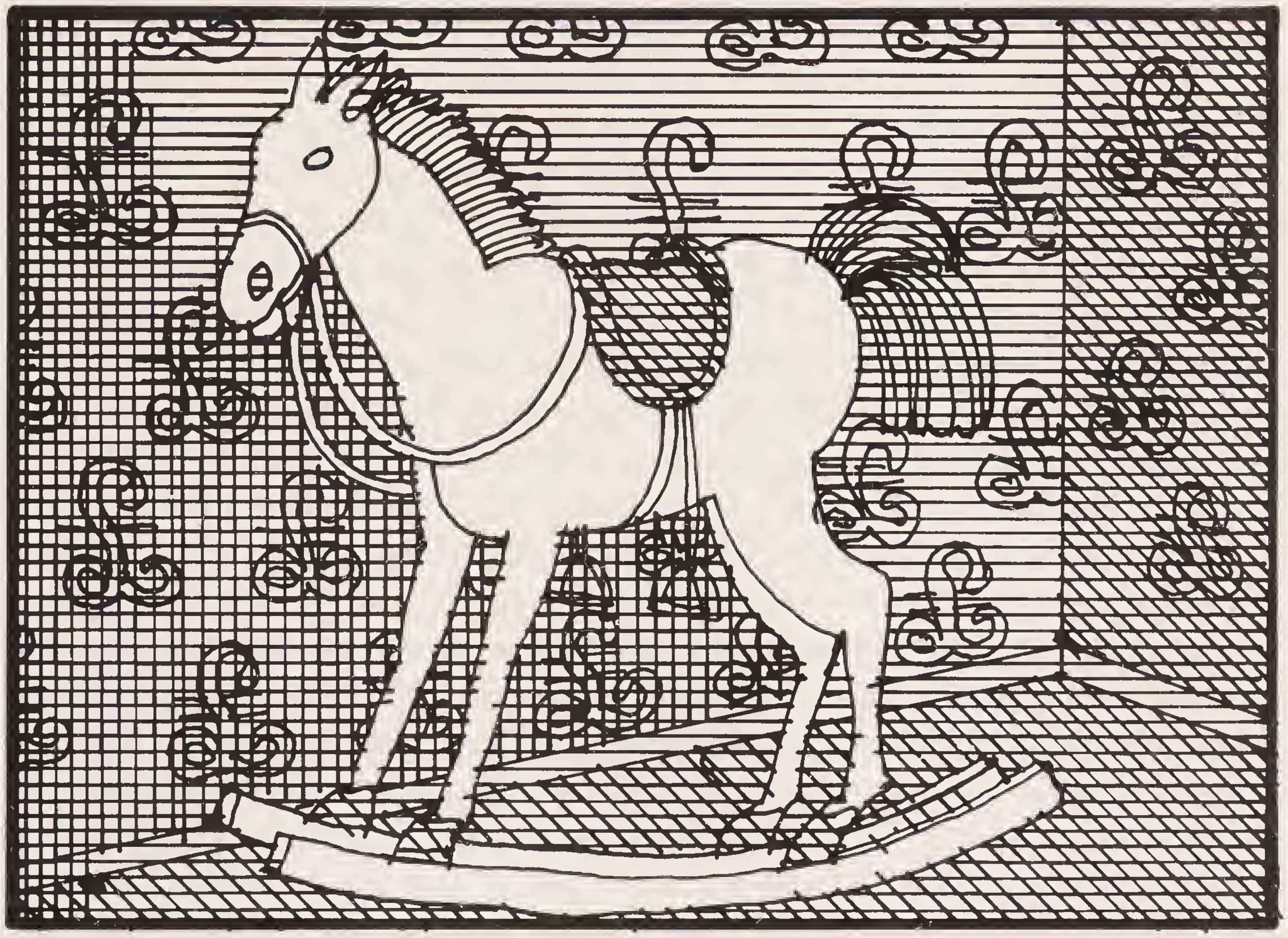
5. **capricious** (304)
   a. generous
   b. angry
   c. erratic
   d. cheerful

Read this article. Write your starting time here: ________.

38

The Rocking-Horse Winner

D. H. Lawrence



THERE WAS A WOMAN who was beautiful, who started with all the advantages, yet she had no luck. She married for love, and the love turned to dust. She had bonny children, yet she felt they had been thrust upon her, and she could not love them. They looked at her coldly, as if they were finding fault with her. And hurriedly she felt she must cover up some fault in herself. Yet what it was that she must cover up she never knew. Nevertheless, when her children were present, she always felt the centre of her heart go hard. This troubled her, and in her manner she was all the more gentle and anxious for her children, as if she loved them very much. Only she herself knew that at the centre of her heart was a hard little place that could not feel love, no, not for anybody. Everybody else said of her: "She is such a good mother. She adores her children." Only she herself, and her children themselves, knew it was not so. They read it in each other's eyes.

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There were a boy and two little girls. They lived in a pleasant house, with a garden, and they had discreet servants, and felt themselves superior to anyone in the neighbourhood.

Although they lived in style, they felt always an anxiety in the house. There was never enough money. The mother had a small income, and the father had a small income, but not nearly enough for the social position which they had to keep up. The father went into town to some office. But though he had good prospects, these prospects never materialized. There was always the grinding sense of the shortage of money, though the style was always kept up.

At last the mother said: "I will see if I can't make something." But she did not know where to begin. She racked her brains, and tried this thing and the other, but could not find anything successful. The failure made deep lines come into her face. Her children were growing up, they would have to go to school. There must be more money, there must be more money. The father, who was always very handsome and expensive in his tastes, seemed as if he never would be able to do anything worth doing. And the mother, who had a great belief in herself, did not succeed any better, and her tastes were just as expensive.

And so the house came to be haunted by the unspoken phrase: There must be more money! There must be more money! The children could hear it all the time, though nobody said it aloud. They heard it at Christmas, when the expensive and splendid toys filled the nursery. Behind the shining modern rocking horse, behind the smart doll's house, a voice would start whispering: "There must be more money! There must be more money!" And the children would stop playing, to listen for a moment. They would look into each other's eyes, to see if they had all heard. And each one saw in the eyes of the other two that they too had heard. "There must be more money! There must be more money!"

It came whispering from the springs of the still-swaying rocking horse, and even the horse, bending his wooden, champing head, heard it. The big doll, sitting so pink and smirking in her new pram, could hear it quite plainly, and seemed to be smirking all the more self-consciously because of it. The foolish puppy, too, that took the place of the Teddy bear, he was looking so extraordinarily foolish for no other reason but that he heard the secret whisper all over the house: "There must be more money!"

Yet nobody ever said it aloud. The whisper was everywhere, and therefore no one spoke it. Just as no one ever says: "We are breathing!" in spite of the fact that breath is coming and going all the time.

"Mother," said the boy Paul one day, "why don't we keep a car of our own? Why do we always use uncle's, or else a taxi?"

"Because we're the poor members of the family," said the mother.

"But why are we, mother?"

"Well—I suppose," she said slowly and bitterly, "it's because your father has no luck."

The boy was silent for some time.

"Is luck money, mother?" he asked, rather timidly.

"No, Paul. Not quite. It's what causes you to have money."

"Oh!" said Paul vaguely. "I thought when Uncle Oscar said filthy lucker, it meant money."

"Filthy lucre does mean money," said the mother, "But it's lucre, not luck."

"Oh!" said the boy. "Then what is luck, mother?"

"It's what causes you to have money. If you're lucky you have money. That's why it's better to be born lucky than rich. If you're rich, you may lose your money. But if you're lucky, you will always get more money."

"Oh! Will you? And is father not lucky?"

"Very unlucky, I should say," she said bitterly.

The boy watched her with unsure eyes.

"Why?" he asked.

"I don't know. Nobody ever knows why one person is lucky and another unlucky."

"Don't they? Nobody at all? Does nobody know?"

"Perhaps God. But He never tells."

"He ought to, then. And aren't you lucky either, mother?"

"I can't be, if I married an unlucky husband."

"But by yourself, aren't you?"

"I used to think I was, before I married. Now I think I am very unlucky indeed."

"Why?"

"Well—never mind! Perhaps I'm not really," she said.

The child looked at her, to see if she meant it. But he saw, by the lines of her mouth, that she was only trying to hide something from him.

"Well, anyhow," he said stoutly, "I'm a lucky person."

"Why?" said his mother, with a sudden laugh.

He stared at her. He didn't even know why he had said it.

"God told me," he asserted, brazening it out.

"I hope He did, dear!" she said, again with a laugh, but rather bitter.

"He did, mother!"

"Excellent!" said the mother, using one of her husband's exclamations.

The boy saw she did not believe him; or, rather, that she paid no attention to his assertion. This angered him somewhat, and made him want to compel her attention.

He went off by himself, vaguely, in a childish way, seeking for the clue to "luck." Absorbed, taking no heed of other people, he went about with a sort of stealth, seeking inwardly for luck. He wanted luck, he wanted it, he wanted it. When the two girls were playing dolls in the nursery, he would sit on his big rocking horse, charging madly into space, with a frenzy that made the little girls peer at him uneasily. Wildly the horse careered, the waving dark hair of the boy tossed, his eyes had a strange glare in them. The little girls dared not to speak to him.

When he had ridden to the end of his mad little journey, he climbed down and stood in front of his rocking horse, staring fixedly into his lowered face. Its red mouth was slightly open, its big eye was wide and glassy-bright.

"Now!" he would silently command the snorting steed. "Now, take me to where there is luck! Now take me!"

And he would slash the horse on the neck with the little whip he had asked Uncle Oscar for. He knew the horse could take him to where there was luck, if only he forced it. So he would mount again, and start on his furious ride, hoping at last to get there. He knew he could get there.

"You'll break your horse, Paul!" said the nurse.

"He's always riding like that! I wish he'd leave off!" said his elder sister Joan.

But he only glared down on them in silence. Nurse gave him up. She could make nothing of him. Anyhow he was growing beyond her.

One day his mother and his Uncle Oscar came in when he was on one of his furious rides. He did not speak to them.

"Hallo, you young jockey! Riding a winner?" said his uncle.

"Aren't you growing too big for a rocking horse? You're not a very little boy any longer, you know," said his mother.

But Paul only gave a blue glare from his big, rather close-set eyes. He would speak to nobody when he was in full tilt. His mother watched him with an anxious expression on her face.

At last he suddenly stopped forcing his horse into the mechanical gallop, and slid down.

"Well, I got there!" he announced fiercely, his blue eyes still flaring, and his sturdy long legs straddling apart.

"Where did you get to?" asked his mother.

"Where I wanted to go," he flared back at her.

"That's right, son!" said Uncle Oscar. "Don't you stop till you get there. What's the horse's name?"

"He doesn't have a name," said the boy.

"Gets on without all right?" asked the uncle.

"Well, he has different names. He was called Sansovino last week."

"Sansovino, eh? Won the Ascot. How did you know his name?"

"He always talks about horse races with Bassett," said Joan.

The uncle was delighted to find that his small nephew was posted with all the racing news. Bassett, the young gardener, who had been wounded in the left foot in the war and got his present job through Oscar Cresswell, whose batman he had been, was a perfect blade of the "turf." He lived in the racing events, and the small boy lived with him.

Oscar Cresswell got it all from Bassett.

"Master Paul comes and asks me, so I can't do more than tell him, sir," said Bassett, his face terribly serious, as if he were speaking of religious matters.

"And does he ever put anything on a horse he fancies?"

"Well—I don't want to give him away—he's a young sport, a fine sport, sir. Would you mind asking him yourself? He sort of takes a pleasure in it, and perhaps he'd feel I was giving him away, sir, if you don't mind."

Bassett was serious as a church.

The uncle went back to his nephew, and took him off for a ride in the car.

"Say, Paul, old man, do you ever put anything on a horse?" the uncle asked.

The boy watched the handsome man closely.

"Why, do you think I oughtn't to?" he parried.

"Not a bit of it! I thought perhaps you might give me a tip for the Lincoln."

The car sped on into the country, going down to Uncle Oscar's place in Hampshire.

"Honour bright?" said the nephew.

"Honour bright, son!" said the uncle.

"Well, then, Daffodil."

"Daffodil! I doubt it, sonny. What about Mirza?"

"I only know the winner," said the boy. "That's Daffodil."

"Daffodil, eh?"

There was a pause. Daffodil was an obscure horse comparatively.

"Uncle!"

"Yes, son?"

"You won't let it go any further, will you? I promised Bassett."

"Bassett be damned, old man! What's he got to do with it?"

"We're partners. We've been partners from the first. Uncle, he lent me my first five shillings, which I lost. I promised him, honour bright, it was only between me and him; only you gave me that ten-shilling note I started winning with, so I thought you were lucky. You won't let it go any further, will you?"

The boy gazed at his uncle from those big, hot, blue eyes, set rather close together. The uncle stirred and laughed uneasily.

"Right you are, son! I'll keep your tip private. Daffodil, eh? How much are you putting on him?"

"All except twenty pounds," said the boy. "I keep that in reserve."

The uncle thought it a good joke.

"You keep twenty pound in reserve, do you, you young romancer? What are you betting, then?"

"I'm betting three hundred," said the boy gravely. "But it's between you and me, Uncle Oscar! Honour bright?"

The uncle burst into a roar of laughter.

"It's between you and me all right, you young Nat Gould," he said, laughing. "But where's your three hundred?"

"Bassett keeps it for me. We're partners."

"You are, are you! And what is Bassett putting on Daffodil?"

"He won't go quite as high as I do, I expect. Perhaps he'll go a hundred and fifty."

"What, pennies?" laughed the uncle.

"Pounds," said the child, with a surprised look at his uncle. "Bassett keeps a bigger reserve than I do."

Between wonder and amusement Uncle Oscar was silent. He pursued the matter no further, but he determined to take his nephew with him to the Lincoln races.

"Now, son," he said, "I'm putting twenty on Mirza, and I'll put five for you on any horse you fancy. What's your pick?"

"Daffodil, uncle."

"No, not the fiver on Daffodil!"

"I should if it was my own fiver," said the child.

"Good! Good! Right you are! A fiver for me and a fiver for you on Daffodil."

The child had never been to a race meeting before, and his eyes were blue fire. He pursed his mouth tight, and watched. A Frenchman just in front had put his money on Lancelot. Wild with excitement, he flayed his arms up and down, yelling "Lancelot! Lancelot!" in his French accent.

Daffodil came in first, Lancelot second, Mirza third. The child, flushed and with eyes blazing, was curiously serene. His uncle brought him four five-pound notes, four to one.

"What am I to do with these?" he cried, waving them before the boy's eyes.

"I suppose we'll talk to Bassett," said the boy. "I expect I have fifteen hundred now; and twenty in reserve; and this twenty."

His uncle studied him for some moments.

"Look here, son!" he said, "You're not serious about Bassett and that fifteen hundred, are you?"

"Yes, I am. But it's between you and me, uncle. Honour bright!"

"Honour bright all right, son! But I must talk to Bassett."

"If you'd like to be a partner, uncle, with Bassett and me, we could all be partners. Only, you'd have to promise, honour bright, uncle, not to let it go beyond us three. Bassett and I are lucky, and you must be lucky, because it was your ten shillings I started winning with . . ."

Uncle Oscar took both Bassett and Paul into Richmond Park for an afternoon, and there they talked.

"It's like this, you see, sir," Bassett said. "Master Paul would get me talking about racing events, spinning yarns, you know, sir. And he was always keen on knowing if I'd made or if I'd lost. It's about a year since, now, that I put five shillings on Blush of Dawn for him—and we lost. Then the luck turned, with that ten shillings he had from you, that we put on Singhalese. And since that time, it's been pretty steady, all things considering. What do you say, Master Paul?"

"We're all right when we're sure," said Paul. "It's when we're not quite sure that we go down."

"Oh, but we're careful then," said Bassett.

"But when are you sure?" smiled Uncle Oscar.

"It's Master Paul, sir," said Bassett, in a secret, religious voice. "It's as if he had it from heaven. Like Daffodil, now, for the Lincoln. That was as sure as eggs."

"Did you put anything on Daffodil?" asked Oscar Cresswell.

"Yes, sir, I made my bit."

"And my nephew?"

Bassett was obstinately silent, looking at Paul.

"I made twelve hundred, didn't I, Bassett? I told uncle I was putting three hundred on Daffodil."

"That's right," said Bassett, nodding.

"But where's the money?" asked the uncle.

"I keep it safe locked up, sir. Master Paul he can have it any minute he likes to ask for it."

"What, fifteen hundred pounds?"

"And twenty! and forty, that is, with the twenty he made on the course."

"It's amazing!" said the uncle.

"If Master Paul offers you to be partners, sir, I would, if I were you; if you'll excuse me," said Bassett.

Oscar Cresswell thought about it.

"I'll see the money," he said.

They drove home again, and sure enough, Bassett came round to the garden-house with fifteen hundred pounds in notes. The twenty pounds reserve was left with Joe Glee, in the Turf Commission deposit.

"You see, it's all right, uncle, when I'm sure! Then we go strong, for all we're worth. Don't we, Bassett?"

"We do that, Master Paul."

"And when are you sure?" said the uncle, laughing.

"Oh, well, sometimes I'm absolutely sure, like about Daffodil," said the boy; "and sometimes I have an idea; and sometimes I haven't even an idea, have I, Bassett? Then we're careful, because we mostly go down."

"You do, do you! And when you're sure, like about Daffodil, what makes you sure, sonny?"

"Oh, well, I don't know," said the boy uneasily. "I'm sure, you know, uncle; that's all."

"It's as if he had it from heaven, sir," Bassett reiterated.

"I should say so!" said the uncle.

But he became a partner. And when the Leger was coming on, Paul was "sure" about Lively Spark, which was a quite inconsiderable horse. The boy insisted on putting a thousand on the horse, Bassett went for five hundred, and Oscar Cresswell two hundred. Lively Spark came in first, and the betting had been ten to one against him. Paul had made ten thousand.

"You see," he said, "I was absolutely sure of him."

Even Oscar Cresswell had cleared two thousand.

"Look here, son," he said, "this sort of thing makes me nervous."

"It needn't, uncle! Perhaps I shan't be sure again for a long time."

"But what are you going to do with your money?" asked the uncle.

"Of course," said the boy, "I started it for mother. She said she had no luck, because father is unlucky, so I thought if I was lucky, it might stop whispering."

"What might stop whispering?"

"Our house. I hate our house for whispering."

"What does it whisper?"

"Why—why"—the boy fidgeted—"why, I don't know. But it's always short of money, you know, uncle."

"I know it, son, I know it."

"You know people send mother writs, don't you, uncle?"

"I'm afraid I do," said the uncle.

"And then the house whispers, like people laughing at you behind your back. It's awful, that is! I thought if I was lucky . . ."

"You might stop it," added the uncle.

The boy watched him with big blue eyes that had an uncanny cold fire in them, and he said never a word.

"Well, then!" said the uncle. "What are we doing?"

"I shouldn't like mother to know I was lucky," said the boy.

"Why not, son?"

"She'd stop me."

"I don't think she would."

"Oh!"—and the boy writhed in an odd way—"I don't want her to know, uncle."

"All right, son! We'll manage it without her knowing."

They managed it very easily. Paul, at the other's suggestion, handed over five thousand pounds to his uncle, who deposited it with the family lawyer, who was then to inform Paul's mother that a relative had put five thousand pounds into his hands, which sum was to be paid out a thousand pounds at a time, on the mother's birthday, for the next five years.

"So she'll have a birthday present of a thousand pounds for five successive years," said Uncle Oscar. "I hope it won't make it all the harder for her later."

Paul's mother had her birthday in November. The house had been "whispering" worse than ever lately, and, even in spite of his luck, Paul could not bear up against it. He was very anxious to see the effect of the birthday letter, telling his mother about the thousand pounds.

When there were no visitors, Paul now took his meals with his parents, as he was beyond the nursery control. His mother went into town nearly every day. She had discovered that she had an odd knack of sketching furs and dress materials, so she worked secretly in the studio of a friend who was the chief "artist" for the leading drapers. She drew the figures of ladies in furs and ladies in silk and sequins for the newspaper advertisements. This young woman artist earned several thousand pounds a year, but Paul's mother only made several hundreds, and she was again dissatisfied. She so wanted to be first in something, and she did not succeed, even in making sketches for drapery advertisements.

She was down to breakfast on the morning of her birthday. Paul watched her face as she read her letters. He knew the lawyer's letter. As his mother read it, her face hardened and became more expressionless. Then a cold, determined look came on her mouth. She hid the letter under the pile of others, and said not a word about it.

"Didn't you have anything nice in the post for your birthday, mother?" said Paul.

"Quite moderately nice," she said, her voice cold and absent.

She went away to town without saying more.

But in the afternoon Uncle Oscar appeared. He said Paul's mother had had a long interview with the lawyer, asking if the whole five thousand could be advanced at once, as she was in debt.

"What do you think, uncle?" said the boy.

"I leave it to you, son."

"Oh, let her have it, then! We can get some more with the other," said the boy.

"A bird in the hand is worth two in the bush, laddie!" said Uncle Oscar.

"But I'm sure to know for the Grand National; or the Lincolnshire; or else the Derby. I'm sure to know for one of them," said Paul.

So Uncle Oscar signed the agreement, and Paul's mother touched the whole five thousand. Then something very curious happened. The voices in the house suddenly went mad, like a chorus of frogs on a spring evening. There were certain new furnishings, and Paul had a tutor. He was really going to Eton, his father's school, in the following autumn. There were flowers in the winter and a blossoming of the luxury Paul's mother had been used to. And yet the voices in the house, behind the sprays of mimosa and almond blossom, and from under the piles of iridescent cushions, simply trilled and screamed in a sort of ecstasy: "There must be more money! Oh-h-h, there must be more money. Oh, now, now-w! Now-w-w–there must be more money—more than ever! More than ever!"

It frightened Paul terribly. He studied away at his Latin and Greek with his tutors. But his intense hours were spent with Bassett. The Grand National had gone by: he had not "known," and had lost a hundred pounds. Summer was at hand. He was in agony for the Lincoln. But even for the Lincoln he didn't "know" and he lost fifty pounds. He became wild-eyed and strange, as if something were going to explode in him.

"Let it alone, son! Don't you bother about it!" urged Uncle Oscar. But it was as if the boy couldn't really hear what his uncle was saying.

"I've got to know for the Derby! I've got to know for the Derby!" the child reiterated, his big blue eyes blazing with a sort of madness.

His mother noticed how overwrought he was.

"You'd better go to the seaside. Wouldn't you like to go now to the seaside, instead of waiting? I think you'd better," she said, looking down at him anxiously, her heart curiously heavy because of him.

But the child lifted his uncanny blue eyes.

"I couldn't possibly go before the Derby, mother!" he said. "I couldn't possibly!"

"Why not?" she said, her voice becoming heavy when she was opposed. "Why not? You can still go from the seaside to see the Derby with your Uncle Oscar, if that's what you wish. No need for you to wait here. Besides, I think you care too much about these races. It's a bad sign. My family has been a gambling family, and you won't know till you grow up how much damage it has done. But it has done damage. I shall have to send Bassett away, and ask Uncle Oscar not to talk racing to you, unless you promise to be reasonable about it; go away to the seaside and forget it. You're all nerves!"

"I'll do what you like, mother, so long as you don't send me away till after the Derby," the boy said.

"Send you away from where? Just from this house?"

"Yes," he said, gazing at her.

"Why, you curious child, what makes you care about this house so much, suddenly? I never knew you loved it."

He gazed at her without speaking. He had a secret within a secret, something he had not divulged, even to Bassett or to his Uncle Oscar.

But his mother, after standing undecided and a little bit sullen for some moments, said:

"Very well, then! Don't go to the seaside till after the Derby, if you don't wish it. But promise me you won't let your nerves go to pieces. Promise you won't think so much about horse racing and events, as you call them!"

"Oh, no," said the boy casually. "I won't think much about them, mother. You needn't worry. I wouldn't worry, mother, if I were you."

"If you were me and I were you," said his mother, "I wonder what we should do!"

"But you know you needn't worry, mother, don't you?" the boy repeated.

"I should be awfully glad to know it," she said wearily.

"Oh, well, you can, you know. I mean, you ought to know you needn't worry," he insisted.

"Ought I? Then I'll see about it," she said.

Paul's secret of secrets was his wooden horse, that which had no name. Since he was emancipated from a nurse and a nursery-governess, he had had his rocking horse removed to his own bedroom at the top of the house.

"Surely, you're too big for a rocking horse!" his mother had remonstrated.

"Well, you see mother, till I can have a real horse, I like to have some sort of animal about," had been his quaint answer.

"Do you feel he keeps you company?" she laughed.

"Oh, yes! He's very good, he always keeps me company, when I'm there," said Paul.

So the horse, rather shabby, stood in an arrested prance in the boy's bedroom.

The Derby was drawing near, and the boy grew more and more tense. He hardly heard what was spoken to him, he was very frail, and his eyes were really uncanny. His mother had sudden seizures of uneasiness about him. Sometimes, for half-an-hour, she would feel a sudden anxiety about him that was almost anguish. She wanted to rush to him at once, and know he was safe.

Two nights before the Derby, she was at a big party in town, when one of her rushes of anxiety about her boy, her first-born, gripped her heart till she could hardly speak. She fought with the feeling, might and main, for she believed in common sense. But it was too strong. The children's nursery-governess was terribly surprised and startled at being rung up in the night.

"Are the children all right, Miss Wilmot?"

"Oh, yes, they are quite all right."

"Master Paul? Is he all right?"

"He went to bed as right as a trivet. Shall I run up and look at him?"

"No," said Paul's mother reluctantly. "No! Don't trouble. It's all right. Don't sit up. We shall be home fairly soon." She did not want her son's privacy intruded upon.

"Very good," said the governess.

It was about one o'clock when Paul's mother and father drove up to their house. All was still. Paul's mother went to her room and slipped off her white fur coat. She had told her maid not to wait up for her. She heard her husband downstairs, mixing a whisky-and-soda.

And then, because of the strange anxiety at her heart, she stole upstairs to her son's room. Noiselessly she went along the upper corridor. Was there a faint noise? What was it?

She stood, with arrested muscles, outside his door, listening. There was a strange, heavy, and yet not loud noise. Her heart stood still. It was a soundless noise, yet rushing and powerful. Something huge, in violent, hushed motion. What was it? What in God's name was it? She ought to know. She felt that she knew the noise. She knew what it was.

Yet she could not place it. She couldn't say what it was. And on and on it went, like a madness.

Softly, frozen with anxiety and fear, she turned the door handle.

The room was dark. Yet in the space near the window, she heard and saw something plunging to and fro. She gazed in fear and amazement.

Then suddenly she switched on the light, and saw her son, in his green pyjamas, madly surging on the rocking horse. The blaze of light suddenly lit him up, as he urged the wooden horse, and lit her up, as she stood, blonde, in her dress of pale green and crystal, in the doorway.

"Paul!" she cried. "Whatever are you doing?"

"It's Malabar!" he screamed, in a powerful, strange voice. "It's Malabar."

His eyes blazed at her for one strange and senseless second, as he ceased urging his wooden horse. Then he fell with a crash to the ground, and she, all her tormented motherhood flooding upon her, rushed to gather him up.

But he was unconscious, and unconscious he remained, with some brain-fever. He talked and tossed, and his mother sat stonily by his side.

"Malabar! It's Malabar! Bassett, Bassett, I know it! It's Malabar!"

So the child cried, trying to get up and urge the rocking horse that gave him his inspiration.

"What does he mean by Malabar?" asked the heart-frozen mother.

"I don't know," said his father stonily.

"What does he mean by Malabar?" she asked her brother Oscar.

"It's one of the horses running for the Derby," was the answer.

And, in spite of himself, Oscar Cresswell spoke to Bassett, and himself put a thousand on Malabar: at fourteen to one.

The third day of the illness was critical: they were waiting for a change. The boy, with his rather long, curly hair, was tossing ceaselessly on the pillow. He neither slept nor regained consciousness, and his eyes were like blue stones. His mother sat, feeling her heart had gone, turned actually into a stone.

In the evening, Oscar Cresswell did not come, but Bassett sent a message, saying could he come up for one moment, just one moment? Paul's mother was very angry at the intrusion, but on second thought she agreed. The boy was the same. Perhaps Bassett might bring him to consciousness.

The gardener, a shortish fellow with a little brown moustache, and sharp little brown eyes, tiptoed into the room, touched his imaginary cap to Paul's mother, and stole to the bedside, staring with glittering, smallish eyes, at the tossing, dying child.

"Master Paul!" he whispered. "Master Paul! Malabar come in first all right, a clean win. I did as you told me. You've made over seventy thousand pounds, you have; you've got over eighty thousand. Malabar came in all right, Master Paul."

"Malabar! Malabar! Did I say Malabar, mother? Did I say Malabar? Do you think I'm lucky, mother? I knew Malabar, didn't I? Over eighty thousand pounds! I call that lucky, don't you, mother? Over eighty thousand pounds! I knew, didn't I know I knew? Malabar came in all right. If I ride my horse till I'm sure, then I tell you, Bassett, you can go as high as you like. Did you go for all you were worth, Bassett?"

"I went a thousand on it, Master Paul."

"I never told you, mother, that if I can ride my horse, and get there, then I'm absolutely sure—oh, absolutely! Mother, did I ever tell you? I'm lucky."

"No, you never did," said the mother.

But the boy died in the night.

And even as he lay dead, his mother heard her brother's voice saying to her: "My God, Hester, you're eighty-odd thousand to the good and a poor devil of a son to the bad. But, poor devil, poor devil, he's best gone out of a life where he rides his rocking horse to find a winner."

4000 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. the importance of luck.
   b. the evils of materialism.
   c. a mother's guilt.
   d. the psychology of an unloved child.

2. The main idea is that
   a. some people are luckier than others.
   b. money is the root of all evil.
   c. bad mothers should be punished.
   d. an unloved child is in danger.

Details

3. Paul's mother's upbringing had been
   a. poor but respectable.
   b. middle class.
   c. wealthy.
   d. unhappy.

4. Bassett was the family's
   a. gardener.
   b. dog.
   c. gamekeeper.
   d. butler.

5. Oscar Cresswell was
   a. the family's lawyer.
   b. an old friend of the family.
   c. Paul's mother's brother.
   d. Paul's father's uncle.

6. Miss Wilmot was the
   a. children's governess.
   b. mother's unmarried sister.
   c. children's grandmother.
   d. father's first wife.

Inferences

7. Why did Paul have to die?
   a. to punish his parents
   b. as a sacrifice to redeem his parents
   c. because his burden was too heavy
   d. because gambling is sinful

8. Paul's age was probably
   a. three.
   b. six.
   c. nine.
   d. fifteen.

9. Which of the following people seems to love Paul?
   a. his father
   b. Uncle Oscar
   c. Bassett
   d. none of the above

10. Paul's mother's feelings toward her son can best be described as
   a. loving.
   b. indifferent.
   c. hateful.
   d. angry.

CRITICAL READING QUESTIONS

1. Contrast the characterization of Paul's mother with that of the evil stepmother in fairy tales.

2. Why did D. H. Lawrence think that Paul's death was necessary?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **discreet** (310)
   a. thrifty
   b. prudent
   c. talented
   d. happy

2. **lucre** (311)
   a. luck
   b. gold
   c. precious stones
   d. money

3. **parry** (313)
   a. refuse to respond
   b. lie
   c. question aggressively
   d. reply evasively

4. **uncanny** (317)
   a. weird
   b. shrewd
   c. witty
   d. dangerous

5. **writhe** (317)
   a. turn over
   b. squirm
   c. ache
   d. run

Read this article. Write your starting time here: ________.

39

The Catbird Seat

James Thurber

MR. MARTIN BOUGHT THE pack of Camels on Monday night in the most crowded cigar store on Broadway. It was theatre time and seven or eight men were buying cigarettes. The clerk didn't even glance at Mr. Martin, who put the pack in his overcoat pocket and went out. If any of the staff at F & S had seen him buy the cigarettes, they would have been astonished, for it was generally known that Mr. Martin did not smoke, and never had. No one saw him.

It was just a week to the day since Mr. Martin had decided to rub out Mrs. Ulgine Barrows. The term "rub out" pleased him because it suggested nothing more than the correction of an error—in this case an error of Mr. Fitweiler. Mr. Martin had spent each night of the past week working out his plan and examining it. As he walked home now he went over it again. For the hundredth time he resented the element of imprecision, the margin of guesswork that entered into the business. The project as he had worked it out was casual and bold, the risks were considerable. Something might go wrong anywhere along the line. And therein lay the cunning of his scheme. No one would ever see in it the cautious painstaking hand of Erwin Martin, head of the filing department at F & S of whom Mr. Fitweiler had once said, "Man is fallible but Martin isn't." No one would see his hand, that is, unless it were caught in the act.

Sitting in his apartment, drinking a glass of milk, Mr. Martin reviewed his case against Mrs. Ulgine Barrows, as he had every night for seven nights. He began at the beginning. Her quacking voice and braying laugh had first profaned the halls of F & S on March 7, 1941 (Mr. Martin had a head for dates). Old Roberts, the personnel chief, had introduced her as the newly appointed special adviser to the president of the firm, Mr. Fitweiler. The woman had appalled Mr. Martin instantly, but he hadn't shown it. He had given her his dry hand, a look of

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"The Catbird Seat," Copyright © 1945 James Thurber. Copyright © 1973 Helen W. Thurber and Rosemary T. Sauers. From *The Thurber Carnival*, published by Harper & Row. Originally printed in *The New Yorker*. First published in 1942.

studious concentration, and a faint smile. "Well," she had said, looking at the papers on his desk, "are you lifting the oxcart out of the ditch?" As Mr. Martin recalled that moment, over his milk, he squirmed slightly. He must keep his mind on her crimes as a special adviser, not on her peccadillos as a personality. This he found difficult to do, in spite of entering an objection and sustaining it. The faults of the woman as a woman kept chattering on in his mind like an unruly witness. She had, for almost two years now, baited him. In the halls, in the elevator, even in his own office, into which she romped now and then like a circus horse, she was constantly shouting these silly questions at him. "Are you lifting the oxcart out of the ditch? Are you tearing up the pea patch? Are you hollering down the rain barrel? Are you scraping around the bottom of the pickle barrel? Are you sitting in the catbird seat?"

It was Joey Hart, one of Mr. Martin's two assistants, who had explained what the gibberish meant. "She must be a Dodger fan," he had said. "Red Barber announces the Dodger games over the radio and he uses those expressions—picked 'em up down South." Joey had gone on to explain one or two. "Tearing up the pea patch" meant going on a rampage; "sitting in the catbird seat" meant sitting pretty, like a batter with three balls and no strikes on him. Mr. Martin dismissed all this with an effort. It had been annoying, it had driven him near to distraction, but he was too solid a man to be moved to murder by anything so childish. It was fortunate, he reflected as he passed on to the important charges against Mrs. Barrows, that he had stood up under it so well. He had maintained always an outward appearance of polite tolerance. "Why, I even believe you like the woman," Miss Paird, his other assistant, had once said to him. He had simply smiled.

A gavel rapped in Mr. Martin's mind and the case was resumed. Mrs. Ulgine Barrows stood charged with willful, blatant, and persistent attempts to destroy the efficiency and system of F & S. It was competent, material, and relevant to review her advent and rise to power. Mr. Martin had got the story from Miss Paird, who seemed always able to find things out. According to her, Mrs. Barrows had met Mr. Fitweiler at a party, where she had rescued him from the embraces of a powerfully built drunken man who had mistaken the president of F & S for a famous retired Middle Western football coach. She had led him to a sofa and somehow worked upon him a monstrous magic. The aging gentleman had jumped to the conclusion there and then that this was a woman of singular attainments, equipped to bring out the best in him and the firm. A week later he had introduced her into F & S as his special adviser. On that day confusion got its foot in the door. After Miss Tyson, Mr. Brundage and Mr. Bartlett had been fired and Mr.

Munson had taken his hat and stalked out, mailing in his resignation later, old Roberts had been emboldened to speak to Mr. Fitweiler. He mentioned that Mr. Munson's department had been "a little disrupted" and hadn't they perhaps better resume the old system there? Mr. Fitweiler had said certainly not. He had the greatest faith in Mrs. Barrows' ideas. "They require a little seasoning, a little seasoning, is all," he had added. Mr. Roberts had given it up. Mr. Martin reviewed in detail all the changes wrought by Mrs. Barrows. She had begun chipping at the cornices of the firm's edifice and now she was swinging at the foundation with a pickaxe.

Mr. Martin came now, in his summing up, to the afternoon of Monday, November 2, 1942—just one week ago. On that day, at 3 P.M., Mrs. Barrows had bounced into his office. "Boo!" she had yelled. "Are you scraping around the bottom of the pickle barrel?" Mr. Martin had looked at her from under his green eyeshade, saying nothing. She had begun to wander about the office, taking it in with her great, popping eyes. "Do you really need *all* these filing cabinets?" she had demanded suddenly. Mr. Martin's heart had jumped. "Each of these files," he had said, keeping his voice even, "plays an indispensable part in the system of F & S." She had brayed at him, "Well, don't tear up the pea patch!" and gone to the door. From there she had bawled, "But you sure have got a lot of fine scrap in here!" Mr. Martin could no longer doubt that the finger was on his beloved department. Her pickaxe was on the upswing, poised for the first blow. It had not come yet; he had received no blue memo from the enchanted Mr. Fitweiler bearing nonsensical instructions deriving from the obscene woman. But there was no doubt in Mr. Martin's mind that one would be forthcoming. He must act quickly. Already a precious week had gone by. Mr. Martin stood up in his living room, still holding his milk glass. "Gentlemen of the jury," he said to himself, "I demand the death penalty for this horrible person."

The next day Mr. Martin followed his routine, as usual. He polished his glasses more often and once sharpened an already sharp pencil, but not even Miss Paird noticed. Only once did he catch sight of his victim; she swept past him in the hall with a patronizing "Hi!" At five-thirty he walked home, as usual, and had a glass of milk, as usual. He had never drunk anything stronger in his life—unless you could count ginger ale. The late Sam Schlosser, the S of F & S, had praised Mr. Martin at a staff meeting several years before for his temperate habits. "Our most efficient worker neither drinks nor smokes," he had said. "The results speak for themselves." Mr. Fitweiler had sat by, nodding approval.

Mr. Martin was still thinking about that red-letter day as he walked over to the Schrafft's on Fifth Avenue near Forty-sixth Street. He got there, as he always did, at eight o'clock. He finished his dinner and the financial page of the *Sun* at a quarter to nine, as he always did. It was his custom after dinner to take a walk. This time he walked down Fifth Avenue at a casual pace. His gloved hands felt moist and warm, his forehead cold. He transferred the Camels from his overcoat to a jacket pocket. He wondered, as he did so, if they did not represent an unnecessary note of strain. Mrs. Barrows smoked only Luckies. It was his idea to puff a few puffs on a Camel (after the rubbing-out), stub it out in the ashtray holding her lipstick-stained Luckies, and thus drag a small red herring across the trail. Perhaps it was not a good idea. It would take time. He might even choke, too loudly.

Mr. Martin had never seen the house on West Twelfth Street where Mrs. Barrows lived, but he had a clear enough picture of it. Fortunately, she had bragged to everybody about her ducky first-floor apartment in the perfectly darling three-story red-brick. There would be no doorman or other attendants; just the tenants of the second and third floors. As he walked along, Mr. Martin realized that he would get there before nine-thirty. He had considered walking north on Fifth Avenue from Schrafft's to a point from which it would take him until ten o'clock to reach the house. At that hour people were less likely to be coming in or going out. But the procedure would have made an awkward loop in the straight thread of his casualness, and he had abandoned it. It was impossible to figure when people would be entering or leaving the house, anyway. There was a great risk at any hour. If he ran into anybody, he would simply have to place the rubbing-out of Ulgine Barrows in the inactive file forever. The same thing would hold true if there were someone in her apartment. In that case he would just say that he had been passing by, recognized her charming house, and thought to drop in.

It was eighteen minutes after nine when Mr. Martin turned into Twelfth Street. A man passed him, and a man and a woman, talking. There was no one within fifty paces when he came to the house, halfway down the block. He was up the steps and in the small vestibule in no time, pressing the bell under the card that said "Mrs. Ulgine Barrows." When the clicking in the lock started he jumped forward against the door. He got inside fast, closing the door behind him. A bulb in a lantern hung from the hall ceiling on a chain seemed to give a monstrously bright light. There was nobody on the stair, which went up ahead of him along the left wall. A door opened down the hall in the wall on the right. He went toward it swiftly, on tiptoe.

"Well, for God's sake, look who's here!" bawled Mrs. Barrows, and her braying laugh rang out like the report of a shotgun. He rushed past her like a football tackle, bumping her. "Hey, quit shoving!" she said, closing the door behind them. They were in her living room, which seemed to Mr. Martin to be lighted by a hundred lamps. "What's after you?" she said. "You're as jumpy as a goat." He found he was unable to speak. His heart was wheezing in his throat. "I—yes," he finally brought out. She was jabbering and laughing as she started to help him off with his coat. "No, no," he said. "I'll put it here." He took it off and put it on a chair near the door. "Your hat and gloves, too," she said. "You're in a lady's house." He put his hat on top of the coat. Mrs. Barrows seemed larger than he had thought. He kept his gloves on. "I was passing by," he said. "I recognized—is there anyone here?" She laughed louder than ever. "No," she said, "we're all alone. You're as white as a sheet, you funny man. Whatever *has* come over you? I'll mix you a toddy." She started toward a door across the room. "Scotch-and-soda be all right? But say, you don't drink, do you?" She turned and gave him her amused look. Mr. Martin pulled himself together. "Scotch-and-soda will be all right," he heard himself say. He could hear her laughing in the kitchen.

Mr. Martin looked quickly around the living room for the weapon. He had counted on finding one there. There were andirons and a poker and something in a corner that looked like an Indian club. None of them would do. It couldn't be that way. He began to pace around. He came to a desk. On it lay a metal paper knife with an ornate handle. Would it be sharp enough? He reached for it and knocked over a small brass jar. Stamps spilled out of it and it fell to the floor with a clatter. "Hey," Mrs. Barrows yelled from the kitchen, "are you tearing up the pea patch?" Mr. Martin gave a strange laugh. Picking up the knife, he tried its point against his left wrist. It was blunt. It wouldn't do.

When Mrs. Barrows reappeared, carrying two highballs, Mr. Martin, standing there with his gloves on, became acutely conscious of the fantasy he had wrought. Cigarettes in his pocket, a drink prepared for him—it was all too grossly improbable. It was more than that; it was impossible. Somewhere in the back of his mind a vague idea stirred, sprouted. "For heaven's sake, take off those gloves," said Mrs. Barrows. "I always wear them in the house," said Mr. Martin. The idea began to bloom, strange and wonderful. She put the glasses on a coffee table in front of a sofa and sat on the sofa. "Come over here, you odd little man," she said. Mr. Martin went over and sat beside her. It was difficult getting a cigarette out of the pack of Camels, but he managed it. She held a match for him, laughing. "Well," she said, handing him his drink, "this is perfectly marvellous. You with a drink and a cigarette."

Mr. Martin puffed, not too awkwardly, and took a gulp of the highball. "I drink and smoke all the time," he said. He clinked his glass against hers. "Here's nuts to that old windbag, Fitweiler," he said, and gulped again. The stuff tasted awful, but he made no grimace. "Really, Mr. Martin," she said, her voice and posture changing, "you are insulting our employer." Mrs. Barrows was now all special adviser to the president. "I am preparing a bomb," said Mr. Martin, "which will blow the old goat higher than hell." He had only had a little of the drink, which was not strong. It couldn't be that. "Do you take dope or something?" Mrs. Barrows asked coldly. "Heroin," said Mr. Martin. "I'll be coked to the gills when I bump the old buzzard off." "Mr. Martin!" she shouted, getting to her feet. "That will be all of that. You must go at once." Mr. Martin took another swallow of his drink. He tapped his cigarette out in the ashtray and put the pack of Camels on the coffee table. Then he got up. She stood glaring at him. He walked over and put on his hat and coat. "Not a word about this," he said, and laid an index finger against his lips. All Mrs. Barrows could bring out was "Really!" Mr. Martin put his hand on the doorknob. "I'm sitting in the catbird seat," he said. He stuck his tongue out at her and left. Nobody saw him go.

Mr. Martin got to his apartment, walking, well before eleven. No one saw him go in. He had two glasses of milk after brushing his teeth, and he felt elated. It wasn't tipsiness, because he hadn't been tipsy. Anyway, the walk had worn off all effects of the whiskey. He got in bed and read a magazine for a while. He was asleep before midnight.

Mr. Martin got to the office at eight-thirty the next morning, as usual. At a quarter to nine, Ulgine Barrows, who had never before arrived at work before ten, swept into his office. "I'm reporting to Mr. Fitweiler now!" she shouted. "If he turns you over to the police, it's no more than you deserve!" Mr. Martin gave her a look of shocked surprise. "I beg your pardon?" he said. Mrs. Barrows snorted and bounced out of the room, leaving Miss Paird and Joey Hart staring after her. "What's the matter with that old devil now?" asked Miss Paird. "I have no idea," said Mr. Martin, resuming his work. The other two looked at him and then at each other. Miss Paird got up and went out. She walked slowly past the closed door of Mr. Fitweiler's office. Mrs. Barrows was yelling inside, but she was not braying. Miss Paird could not hear what the woman was saying. She went back to her desk.

Forty-five minutes later, Mrs. Barrows left the president's office and went into her own, shutting the door. It wasn't until half an hour later that Mr. Fitweiler sent for Mr. Martin. The head of the filing department, neat, quiet, attentive, stood in front of the old man's desk. Mr. Fitweiler was pale and nervous. He took his glasses off and twiddled them. He made a small, bruffing sound in his throat. "Martin," he said, "you have been with us more than twenty years." "Twenty-two, sir," said Mr. Martin. "In that time," pursued the president, "your work and your—uh—manner have been exemplary." "I trust so, sir," said Mr. Martin. "I have understood, Martin," said Mr. Fitweiler, "that you have never taken a drink or smoked." "That is correct, sir," said Mr. Martin. "Ah, yes." Mr. Fitweiler polished his glasses. "You may describe what you did after leaving the office yesterday, Martin," he said. Mr. Martin allowed less than a second for his bewildered pause. "Certainly, sir," he said. "I walked home. Then I went to Schrafft's for dinner. Afterward I walked home again. I went to bed early, sir, and read a magazine for a while. I was asleep before eleven." "Ah yes," said Mr. Fitweiler again. He was silent for a moment, searching for the proper words to say to the head of the filing department. "Mrs. Barrows," he said finally, "Mrs. Barrows has worked hard, Martin, very hard. It grieves me to report that she has suffered a severe breakdown. It has taken the form of a persecution complex accompanied by distressing hallucinations." "I am very sorry, sir," said Mr. Martin. "Mrs. Barrows is under the delusion," continued Mr. Fitweiler, "that you visited her last evening and behaved yourself in an—uh—unseemly manner." He raised his hand to silence Mr. Martin's little pained outcry. "It is the nature of these psychological diseases," Mr. Fitweiler said, "to fix upon the least likely and most innocent party as the —uh—source of persecution. These matters are not for the lay mind to grasp, Martin. I've just had my psychiatrist, Dr. Fitch, on the phone. He would not, of course, commit himself, but he made enough generalizations to substantiate my suspicions. I suggested to Mrs. Barrows, when she had completed her—uh—story to me this morning, that she visit Dr. Fitch, for I suspected a condition at once. She flew, I regret to say, into a rage, and demanded—uh—requested that I call you on the carpet. You may not know, Martin, but Mrs. Barrows had planned a reorganization of your department—subject to my approval, of course, subject to my approval. This brought you, rather than anyone else, to her mind—but again that is a phenomenon for Dr. Fitch and not for us. So, Martin, I am afraid Mrs. Barrows' usefulness here is at an end." "I am dreadfully sorry, sir," said Mr. Martin.

It was at this point that the door to the office blew open with the suddenness of a gas-main explosion and Mrs. Barrows catapulted through it. "Is the little rat denying it?" she screamed. "He can't get away with that!" Mr. Martin got up and moved discreetly to a point beside Mr. Fitweiler's chair. "You drank and smoked at my apartment," she bawled at Mr. Martin, "and you know it! You called Mr. Fitweiler an old windbag and said you were going to blow him up when you got coked to the gills on your heroin!'' She stopped yelling to catch her breath and a new glint came into her popping eyes. ''If you weren't such a drab, ordinary little man,'' she said, ''I'd think you'd planned it all. Sticking your tongue out, saying you were sitting in the catbird seat, because you thought no one would believe me when I told it! My God, it's really too perfect!'' She brayed loudly and hysterically, and the fury was on her again. She glared at Mr. Fitweiler. ''Can't you see how he has tricked us, you old fool? Can't you see his little game?'' But Mr. Fitweiler had been surreptitiously pressing all the buttons under the top of his desk and employees of F & S began pouring into the room. ''Stockton,'' said Mr. Fitweiler, ''you and Fishbein will take Mrs. Barrows to her home. Mrs. Powell, you will go with them.'' Stockton, who had played a little football in high school, blocked Mrs. Barrows as she made for Mr. Martin. It took him and Fishbein together to force her out of the door into the hall, crowded with stenographers and office boys. She was still screaming imprecations at Mr. Martin, tangled and contradictory imprecations. The hubbub finally died out down the corridor.

''I regret that this has happened,'' said Mr. Fitweiler. ''I shall ask you to dismiss it from your mind, Martin.'' ''Yes, sir,'' said Mr. Martin, anticipating his chief's ''That will be all'' by moving to the door. ''I will dismiss it.'' He went out and shut the door, and his step was light and quick in the hall. When he entered his department he had slowed down to his customary gait, and he walked quietly across the room to the W20 file, wearing a look of studious concentration.

3800 words

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COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. the difficulty of working in an office.
   b. how Mr. Martin "eliminated" Mrs. Barrows.
   c. why Mr. Martin saved his job.
   d. Mr. Martin's change of behavior.

2. The main idea of the article is that Mr. Martin
   a. learned to be more aggressive.
   b. was a bright man.
   c. "rubbed out" Mrs. Barrows in an ingenious way.
   d. was devious in his attempt to save his job.

Details

3. No one saw Mr. Martin buy the cigarettes because he
   a. had someone else buy them during lunch.
   b. went to the other end of town.
   c. bought them late at night.
   d. went to a very crowded store.

4. Who ended up in the catbird seat?
   a. Mr. Martin
   b. Mrs. Barrows
   c. Mr. Fitweiler
   d. No one did.

5. After Mr. Martin left Mrs. Barrows' apartment, he went
   a. to have dinner.
   b. directly home.
   c. to a movie.
   d. back to work.

6. The next morning Mrs. Barrows arrived at the office
   a. late.
   b. at her usual time.
   c. earlier than ever before.
   d. before Mr. Martin.

Inferences

7. At what point in the story did Mr. Martin probably change his plans?
   a. at the office
   b. on the way to Mrs. Barrows' apartment
   c. in Mrs. Barrows' apartment
   d. after he left Mrs. Barrows' apartment

8. Why did Mrs. Barrows offer Mr. Martin a drink?
   a. She was trying to offend him.
   b. She was trying to seduce him.
   c. She offered it as a medicine.
   d. She was absent-minded and forgot he had said no the first time she offered.

9. From the article you can infer that
   a. Mr. Martin was insane.
   b. Mrs. Barrows suspected Mr. Martin when he came to her apartment.
   c. Mrs. Barrows was fooled by Mr. Martin.
   d. Mr. Fitweiler had planned to fire Mrs. Barrows anyway.

10. From the article you can infer that Mr. Martin
    a. suspected that his job was in jeopardy.
    b. was not very intelligent.
    c. would have killed Mrs. Barrows if his other plan had failed.
    d. wasn't happy being in charge of filing.

CRITICAL READING QUESTIONS

1. Thurber is considered a humorist. Is this a funny story? Why?

2. Do you believe that Mr. Martin was justified in his actions? Why?

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

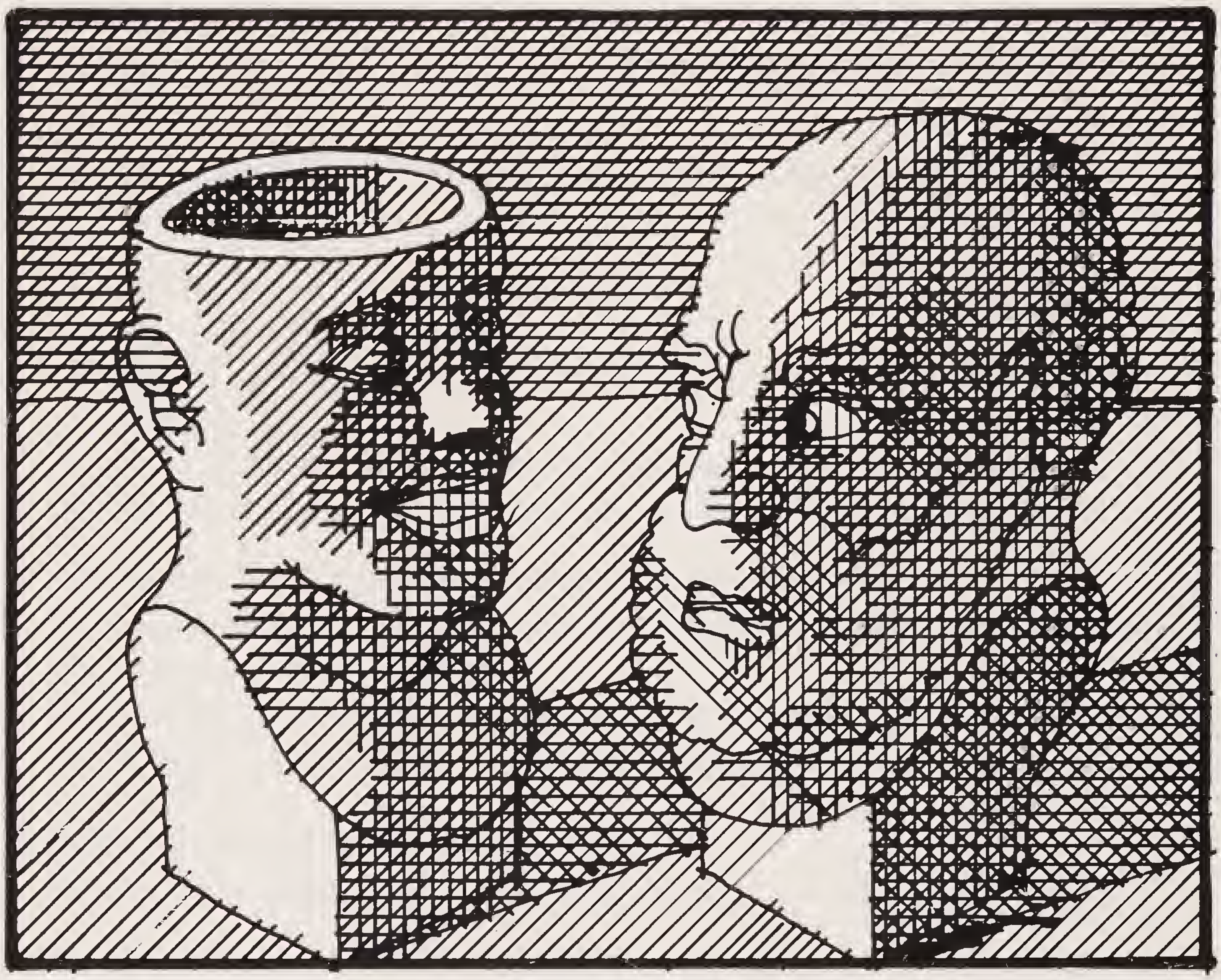
1. **fallible** (325)
    a. capable of greatness
    b. incapable of error
    c. capable of murder
    d. capable of making mistakes
2. **peccadillos** (326)
    a. standards
    b. peculiarities
    c. faults
    d. strengths
3. **edifice** (327)
    a. window
    b. neighborhood
    c. building
    d. stairs
4. **surreptitously** (332)
    a. openly
    b. sneakily
    c. awkwardly
    d. carefully
5. **imprecations** (332)
    a. curses
    b. praises
    c. threats
    d. hallucinations

Read this article. Write your starting time here: ________.

40

Story of a Good Brahman

Voltaire



I met on my travels an old Brahman, a very wise man, full of wit and very learned; moreover he was rich, and consequently even wiser; for, lacking nothing, he had no need to deceive anyone. His family was very well governed by three beautiful wives who schooled themselves to please him; and when he was not entertaining himself with his wives, he was busy philosophizing.

Near his house, which was beautiful, well decorated, and surrounded by charming gardens, lived an old Indian woman, bigoted, imbecilic, and rather poor.

The Brahman said to me one day: "I wish I had never been born."

I asked him why. He replied:

From *Voltaire: Candide, Zadig and Selected Stories.* Donald M. Frame, Trans. Copyright © 1961 by Donald M. Frame. Reprinted by arrangement with The New American Library, Inc., New York.

"I have been studying for forty years, which is forty years wasted; I teach others, and I know nothing; this situation brings into my soul so much humiliation and disgust that life is unbearable to me. I was born, I live in time, and I do not know what time is; I find myself in a point between two eternities, as our sages say, and I have no idea of eternity. I am composed of matter; I think, and I have never been able to find out what produces thought; I do not know whether my understanding is a simple faculty in me like that of walking or of digesting, and whether I think with my head, as I take with my hands. Not only is the principle of my thinking unknown to me, but the principle of my movements is equally hidden from me. I do not know why I exist. However, people every day ask me questions on all these points; I have to answer; I have nothing any good to say; I talk much, and I remain confounded and ashamed of myself after talking.

"It is much worse yet when they ask me whether Brahma was produced by Vishnu or whether they are both eternal. God is my witness that I don't know a thing about it, and it certainly shows in my answers. 'Ah! Reverend Father,' they say to me, 'teach us how it is that evil inundates the whole world.' I am as much at a loss as those who ask me that question; I sometimes tell them that all is for the very best, but those who have been ruined and mutilated at war believe nothing of it, and neither do I; I retreat to my house overwhelmed with my curiosity and my ignorance. I read our ancient books, and they redouble the darkness I am in. I talk to my companions: some answer that we must enjoy life and laugh at men; the others think they know something, and lose themselves in absurd ideas; everything increases the painful feeling I endure. I am sometimes ready to fall into despair, when I think that after all my seeking I know neither where I come from, nor what I am, nor where I shall go, nor what shall become of me."

The state of this good man caused me real pain; no one was either more reasonable or more honest than he. I perceived that the greater the lights of his understanding and the sensibility of his heart, the more unhappy he was.

That same day I saw the old woman who lived in his vicinity: I asked her whether she had ever been distressed not to know how her soul was made. She did not even understand my question: she had never reflected a single moment of her life over a single one of the points that tormented the Brahman; she believed with all her heart in the metamorphoses of Vishnu, and, provided she could sometimes have some water from the Ganges to wash in, she thought herself the happiest of women.

Struck by the happiness of this indigent creature, I returned to my philosopher and said to him:

"Aren't you ashamed to be unhappy at a time when right at your door there is an old automaton who thinks of nothing and who lives happily?"

"You are right," he answered; "I have told myself a hundred times that I would be happy if I was as stupid as my neighbor, and yet I would want no part of such a happiness."

This answer of my Brahman made a greater impression on me than all the rest. I examined myself and saw that indeed I would not have wanted to be happy on condition of being imbecilic.

I put the matter up to some philosophers, and they were of my opinion.

"There is, however," I said, "a stupendous contradiction in this way of thinking."

For after all, what is at issue? Being happy. What matters being witty or being stupid? What is more, those who are content with their being are quite sure of being content; those who reason are not so sure of reasoning well.

"So it is clear," I said, "that we should choose not to have common sense, if ever that common sense contributes to our ill-being."

Everyone was of my opinion, and yet I found no one who wanted to accept the bargain of becoming imbecilic in order to become content. From this I concluded that if we set store by happiness, we set even greater store by reason.

But, upon reflection, it appears that to prefer reason to felicity is to be very mad. Then how can this contradiction be explained? Like all the others. There is much to be said about it.

900 words

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COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject of the article is
   a. the conflict between reason and happiness.
   b. the price of reason.
   c. the Brahman and the old woman.
   d. philosophy.

2. The main idea of the article is that
   a. ignorance is bliss.
   b. it is impossible to be both happy and wise.
   c. there is a conflict between reason and happiness.
   d. it's better to be happy than to be wise.

Details

3. The Brahman was
   a. young and rich.
   b. old and poor.
   c. old and rich.
   d. young and poor.

4. The reason the Brahman was depressed was that he
   a. couldn't answer his questions.
   b. couldn't love the old woman.
   c. knew he was going to die.
   d. felt he had failed his family.

5. By "stupid," the author means
   a. unthinking.
   b. mentally retarded.
   c. unschooled.
   d. religious.

6. The old woman in the story was
   a. poor but happy.
   b. dirty and miserable.
   c. ill.
   d. evil.

Inferences

7. A Brahman is like a
   a. dictator.
   b. monk.
   c. priest.
   d. judge.

8. The author implies that rich people are likely to be
   a. miserable.
   b. old.
   c. honest.
   d. corrupt.

9. The Brahman studies out of
   a. despair.
   b. boredom.
   c. curiosity.
   d. shame.

10. The author implies that to prefer to be wise and unhappy rather than stupid and happy is
   a. stupid.
   b. sick.
   c. crazy.
   d. normal.

CRITICAL READING QUESTIONS

1. The Brahman is a thinker; the woman is a believer. What is the difference?

2. Compare the saying "If ignorance is bliss, 'tis folly to be wise" with "the unexamined life is not worth living."

VOCABULARY CHECK

Here are five words that appeared in the article, with their page numbers. Circle the best definition for each word. If you aren't sure of the correct definition, look back at the context in which the word appeared for clues.

1. **sages** (337)
   a. wisemen
   b. priests
   c. gods
   d. children

2. **faculty** (337)
   a. problem
   b. confusion
   c. ability
   d. lie

3. **inundates** (337)
   a. frees
   b. cleans
   c. floods
   d. punishes

4. **indigent** (337)
   a. wealthy
   b. poor
   c. stupid
   d. dirty

5. **felicity** (338)
   a. riches
   b. praise
   c. happiness
   d. poverty

POSTTEST

Read this article. Write your starting time here: ________.

Variety

Edward J. Whetmore

VARIETY SHOWS OFFER something for everybody. Often they may be centered on the personality of a single star or a troop of familiar faces. Ed Sullivan was the acknowledged king of the variety format, and his CBS Sunday evening show (1948–71) was top rated for more than 20 years. Sullivan prided himself on being a good evaluator of talent and entertainment trends. It was he who boosted Elvis Presley to prominence on TV (though Elvis had appeared on a few TV shows previously). Later came the Beatles and dozens of other rock groups. But that was only a small part of the story. No matter what your entertainment tastes, you could find something each week on the Sullivan show. There were stand-up comics, opera stars, elephant acts, talking dogs, jugglers, cartoonists, and politicians.

Sullivan himself was an enigma. Before working in TV, he had been an entertainment columnist for a New York newspaper. He had absolutely no talent as a performer and seldom got involved with his talented guests. Dozens of comics loved to do imitations of him, often while he watched. It was his very lack of talent that seemed to help him become such a success. He spent very little time in front of the camera, simply introducing the acts and getting out of the way.

Dozens of variety shows have followed. In the 1950s, there were Jackie Gleason and Milton Berle. The 1960s brought the *Smothers Brothers Comedy Hour* and *Rowan and Martin's Laugh-In*. The Smothers brothers began with the usual variety show but rapidly became recognized program innovators, and Tom and Dick Smothers, Mason Williams, and resident comic Pat Paulsen became heroes to those who felt TV shouldn't shy away from controversy. They had a habit of inviting guests who were politically and socially controversial.

Often, the brothers' material was allowed because their skits were satirical and thus the audience was "not taking them seriously," but when folk singer Joan Baez made some remarks against the war in Vietnam, CBS censors snipped them out. The problem was TV, the *mass* medium. The network and some sponsors thought the brothers

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might alienate a part of the mass audience. The Baez incident accelerated the conflict between the Smothers brothers and the network, and after extensive discussions and lots of publicity, the show was cancelled.

Rowan and Martin's Laugh-In got away with things the Smothers brothers had only dreamed of. The secret of success was the special "form" of the show, composed of hundreds of pieces of video tape. There were skits, one-liners, recurring situations, and jokes. *Laugh-In* was the first program to use electronic editing devices extensively to piece together a collection of "out-takes." Dick and Dan would march out on stage at the beginning and say hello. An hour later, they'd come back to say good-bye. In between, anything could happen. There were cameos by John Wayne and Richard Nixon, cream pies and cold showers for the series "regulars." Many, including Goldie Hawn, Lily Tomlin, Ruth Buzzi, and Henry Gibson, went on to success of their own.

Laugh-In first pointed out that TV audiences could handle a lot more entertainment "information" than other shows were offering. Because it relied so heavily on editing and visual devices, *Laugh-In* was uniquely TV. The mass audience gave thundering approval, and the show (originally scheduled as a 13-week summer replacement) became the most successful on TV. In addition, the critics loved it, and *Laugh-In* won every top award, including a flock of Emmys.

Variety shows of the 1970s borrowed heavily from the *Laugh-In* format. Everything had to be sped up for presentation; the more elements the better. In addition, the variety shows of the 1970s depended heavily on technicians and those behind the camera to "create" the visual splendor TV had been lacking. Costuming and set decoration became key factors, as the audience expected to be visually entertained while listening to a song or laughing at a comedy sketch. *Carol Burnett, Sonny and Cher, Donny and Marie,* and others were successful because their producers realized that visual appeal, rapid pacing, and diverse guest lists were a necessity.

The 1970s also brought a flood of variety-type shows that appealed to a youthful late-night audience. *The Midnight Special, Don Kirshner's Rock Concert,* and *In Concert* all featured rock music. Many were built around major rock personalities, but occasionally a little humor would be thrown in for diversity. Though rock generally was still not popular enough for TV's prime-time audience, the late-night Friday and Saturday spots seemed ripe, and ratings were good.

Meanwhile, the British import *Monty Python* had taken the *Laugh-In* formula one step further. This show was a nonstop barrage of satirical sketches that added extensive animation in the tradition of the Beatles' animated film *Yellow Submarine.* BBC censorship standards were considerably more relaxed than American counterparts, and nudity and four-letter words abounded. The same lack of censorship applied when the show was aired over public TV in America, as there were no irate sponsors to object. Besides, as in *Laugh-In*, everything happened so fast that it was hard to know exactly what was being said.

Monty Python became an underground hit, particularly among young people and the public TV audience. But when one of the networks bought the rights to the shows and aired them in competition with the late-night rock shows, regular *Python* viewers set up a howl. Whole sketches and scenes were missing. The performers themselves finally sued to stop commercial airing unless shows were aired uncut. *Monty Python* quickly disappeared from commercial TV but remained a success on the public network.

Meanwhile in America, NBC's *Saturday Night Live* was breaking ground of its own. There was no regular emcee but a weekly "guest host" whose role was often overshadowed by the antics of the Not Ready for Prime Time Players. The comic skits offered satire with a bite, and the late-night hour kept network censorship to a minimum. Where else would TV viewers watch a sketch about a brand of soup called Painful Rectal Itch or see a live fish chopped to bits in a blender?

The extraordinary success of the show gave birth to stardom for a number of its talented stars, including John Belushi, Gilda Radner, and Chevy Chase. But as these stars left the show one by one, they seemed to take a lot of the original energy with them. When NBC reintroduced the program in the fall of 1980, there was an entirely new cast of characters.

In general, the variety format had all but disappeared in the early 1980s. Perhaps the idea of "something for everyone" worked more effectively in TV's early years. As programmers became more sophisticated in constructing TV's mediated reality, they were able to focus more directly on the various subaudiences that make up the mass audience. Thus, the genre that took the shotgun approach to attract viewers became less successful.

1200 words

Write your ending time here: ____________________

Subtract your starting time: ____________________

Total time: ____________________

Check the Rate Chart in the back of the book to find out how many words per minute you have read, and then record your score on the Progress Chart.

COMPREHENSION CHECK

Circle the letter before the best answer to each question below. Don't look back at the article.

Subject and Main Idea

1. The subject is
   a. the history of variety shows on TV.
   b. subaudiences for variety shows.
   c. types of variety shows.
   d. the value of variety shows.

2. The main idea is that variety shows
   a. are the most popular form of entertainment on TV.
   b. are aimed at different subaudiences.
   c. include comedy, music, and other types of talent.
   d. have changed during the past 30 years.

Details

3. The "king of the variety show" was
   a. Milton Berle.
   b. Jackie Gleason.
   c. Tom Smothers.
   d. Ed Sullivan.

4. The first show to use electronic editing devices extensively in the 1960s was
   a. *Sonny and Cher.*
   b. *Carol Burnett.*
   c. *The Smothers Brothers.*
   d. *Laugh-In.*

5. Variety shows of the 1970s paid increased attention to
   a. singing and dancing.
   b. costumes and sets.
   c. comedy.
   d. discovering new talent.

6. The major change in variety show format in the 1980s was getting rid of the
   a. satirical sketches.
   b. extensive animation.
   c. shotgun approach.
   d. genre.

Inferences

7. Which of the following is a variety show?
   a. *The Tonight Show*
   b. *The Jeffersons*
   c. *60 Minutes*
   d. *Dallas*

8. When the author refers to TV's "mediated reality," he means that TV presents
   a. real life.
   b. fantasy.
   c. a reality based on real life, but changed.
   d. lies.

9. A probable reason that public television exercises less censorship than commercial television is that
   a. it has less stringent government controls.
   b. its programming starts after children's bedtimes.
   c. it attracts a less respectable audience.
   d. it doesn't have constant pressure from sponsors.

10. Compared to contemporary variety shows, Ed Sullivan's show was
    a. more like a stage show.
    b. much more sophisticated.
    c. less popular.
    d. aimed at a subaudience.

RATE CHART

To find your reading rate, first look in the left-hand column of this chart to find the time it took you to read the article. Then look along that line until you come to the column headed by the number of words you read. Where the two lines cross, you will find a number indicating how many words per minute (WPM) you have read. For example, if you read 1,200 words in 5 minutes, you have read 240 WPM. Once you've found your score, enter it on the Progress Chart.

To find your reading rate for timings that do not appear on the chart, first compute your time in seconds. (Multiply the number of minutes by 60 and add the number of remaining seconds.) Then divide the number of words read by your time in seconds. Multiply the result by 60 to get back to minutes and seconds.

$$\text{WPM} = \frac{\text{Words read}}{\text{Time in seconds}} \times 60$$

Reading Time		**Number of Words Read**									
Min.	Sec.	900	1000	1100	1200	1300	1400	1500	1600	1700	1800
1	00	900	1000	1100							
1	20	675	750	825	900	975	1050				
1	40	540	600	660	720	780	840	900	960	1020	1080
2	00	450	500	550	600	650	700	750	800	850	900
2	20	385	429	471	514	557	600	643	686	729	771
2	40	338	375	413	450	488	525	563	600	638	675
3	00	300	333	367	400	433	467	500	533	567	600
3	20	270	300	330	360	390	420	450	480	510	540
3	40	245	273	300	327	280	382	409	436	464	491
4	00	225	250	275	300	325	350	375	400	425	450
4	20	208	231	254	277	300	323	346	369	392	415
4	40	193	214	236	257	279	300	321	343	364	386
5	00	180	200	220	240	260	280	300	320	340	360
5	20	169	187	206	225	244	262	281	300	319	337
5	40	159	176	194	212	229	247	265	282	300	318
6	00	150	167	183	200	217	233	250	267	283	300
6	20		158	174	189	205	221	237	253	268	284
6	40		150	165	180	195	210	225	240	255	270
7	00			157	171	186	200	214	229	243	257
7	20			150	164	177	191	205	218	232	245
7	40				156	170	183	196	209	222	235
8	00				150	162	175	188	200	212	225
8	20					156	168	180	192	204	216
8	40					150	162	173	185	196	208
9	00						156	167	178	189	200
9	30						147	158	168	179	189
10	00							150	160	170	180

Reading Time		**Number of Words Read**							
Min.	Sec.	1900	2000	2400	2500	2800	3000	3800	4000
2	00	950	1000						
2	30	760	800	960	1000				
3	00	633	667	800	833	933	1000		
3	30	543	571	686	714	800	857	1086	
4	00	475	500	600	625	700	750	950	1000
4	30	422	444	533	556	622	667	844	889
5	00	380	400	480	500	560	600	760	800
5	30	345	364	436	455	509	545	691	727
6	00	317	333	400	417	467	500	633	667
6	30	292	308	369	385	430	462	585	615
7	00	271	286	343	357	400	429	543	571
7	30	253	267	320	333	373	400	507	533
8	00	237	250	300	312	350	375	475	500
8	30	224	235	282	294	329	353	447	471
9	00	211	222	267	278	311	333	422	444
9	30	200	211	252	263	295	316	400	421
10	00	190	200	240	250	280	300	380	400
11	00	173	182	218	227	255	273	345	364
12	00	158	167	200	208	233	250	317	333
13	00	146	154	185	193	215	231	292	308
14	00		143	171	179	200	214	271	286
15	00			160	167	187	200	253	267
16	00			150	156	175	187	237	250
17	00				147	165	176	223	235
18	00					155	167	211	222
19	00					147	158	200	211
20	00						150	190	200

COMPREHENSION CHART

In this chart, cross out the numbers of any questions you missed in the comprehension check. Your comprehension score is the total number of questions you answered correctly. Remember to analyze your wrong answers so that you won't continue to make the same kinds of mistakes.

Article	Subject and Main Idea	Details	Inferences	Comprehension Score
Pretest	1 2	3 4 5 6	7 8 9 10	
1	1 2	3 4 5 6	7 8 9 10	
2	1 2	3 4 5 6	7 8 9 10	
3	1 2	3 4 5 6	7 8 9 10	
4	1 2	3 4 5 6	7 8 9 10	
5	1 2	3 4 5 6	7 8 9 10	
6	1 2	3 4 5 6	7 8 9 10	
7	1 2	3 4 5 6	7 8 9 10	
8	1 2	3 4 5 6	7 8 9 10	
9	1 2	3 4 5 6	7 8 9 10	
10	1 2	3 4 5 6	7 8 9 10	
11	1 2	3 4 5 6	7 8 9 10	
12	1 2	3 4 5 6	7 8 9 10	
13	1 2	3 4 5 6	7 8 9 10	
14	1 2	3 4 5 6	7 8 9 10	
15	1 2	3 4 5 6	7 8 9 10	
16	1 2	3 4 5 6	7 8 9 10	
17	1 2	3 4 5 6	7 8 9 10	
18	1 2	3 4 5 6	7 8 9 10	
19	1 2	3 4 5 6	7 8 9 10	
20	1 2	3 4 5 6	7 8 9 10	

Article	Subject and Main Idea	Details	Inferences	Comprehension Score
21	1 2	3 4 5 6	7 8 9 10	
22	1 2	3 4 5 6	7 8 9 10	
23	1 2	3 4 5 6	7 8 9 10	
24	1 2	3 4 5 6	7 8 9 10	
25	1 2	3 4 5 6	7 8 9 10	
26	1 2	3 4 5 6	7 8 9 10	
27	1 2	3 4 5 6	7 8 9 10	
28	1 2	3 4 5 6	7 8 9 10	
29	1 2	3 4 5 6	7 8 9 10	
30	1 2	3 4 5 6	7 8 9 10	
31	1 2	3 4 5 6	7 8 9 10	
32	1 2	3 4 5 6	7 8 9 10	
33	1 2	3 4 5 6	7 8 9 10	
34	1 2	3 4 5 6	7 8 9 10	
35	1 2	3 4 5 6	7 8 9 10	
36	1 2	3 4 5 6	7 8 9 10	
37	1 2	3 4 5 6	7 8 9 10	
38	1 2	3 4 5 6	7 8 9 10	
39	1 2	3 4 5 6	7 8 9 10	
40	1 2	3 4 5 6	7 8 9 10	
Posttest	1 2	3 4 5 6	7 8 9 10	

PROGRESS CHART

At the bottom of the following chart, enter the date, your reading rate (in words per minute), and your comprehension score for each article you read. Then construct a graph by putting a dot in the square closest to your reading rate for each article. Make the graph by connecting the dots.

Your goal is to show improvement in rate with no loss in comprehension. A score of 80 percent comprehension is considered adequate for most purposes. However, even if you stay at the same reading rate for all 40 articles, you are still improving because the articles get harder in each section of the book. Don't worry if you see more dips in your reading rate. Articles vary in difficulty because of the content, the vocabulary, your familiarity with the subject matter, and your level of interest. More difficult material should be read more slowly. However, if your overall reading rate appears to be dropping, you should discuss the problem with your instructor.

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Article	31	32	33	34	35	36	37	38	39	40	Posttest
Rate (WPM)											
Comprehension Score											
Date											

ANSWERS

Pretest *Sitcom*
Comprehension Check: 1. d, 2. c, 3. a, 4. b, 5. c, 6. a, 7. a, 8. b, 9. c, 10. d

1 *How to Sell Yourself with a Résumé*
Comprehension Check: 1. c, 2. c, 3. b, 4. d, 5. d, 6. d, 7. d, 8. d, 9. d, 10. c
Vocabulary Check: 1. a, 2. c, 3. b, 4. c, 5. d

2 *Food and Drugs: Take Only as Directed*
Comprehension Check: 1. a, 2. c, 3. d, 4. c, 5. a, 6. c, 7. d, 8. d, 9. a, 10. c
Vocabulary Check: 1. a, 2. c, 3. d, 4. b, 5. c

3 *Investigating Large Numbers*
Comprehension Check: 1. a, 2. c, 3. d, 4. d, 5. b, 6. a, 7. c, 8. b, 9. c, 10. b
Vocabulary Check: 1. a, 2. c, 3. b, 4. a, 5. d

4 *How to Enjoy Poetry*
Comprehension Check: 1. c, 2. b, 3. d, 4. a, 5. a, 6. a, 7. b, 8. d, 9. a, 10. d
Vocabulary Check: 1. c, 2. b, 3. c, 4. a, 5. c

5 *Alfred Hitchcock: Unforgettable Master of the Macabre*
Comprehension Check: 1. b, 2. a, 3. d, 4. a, 5. c, 6. b, 7. c, 8. d, 9. d, 10. c
Vocabulary Check: 1. c, 2. a, 3. d, 4. c, 5. a

6 *Improving Your T.Q. (Test-Taking Quotient)*
Comprehension Check: 1. b, 2. d, 3. a, 4. c, 5. b, 6. d, 7. a, 8. b, 9. a, 10. d
Vocabulary Check: 1. d, 2. b, 3. a, 4. c, 5. d

7 *Larks and Owls: The Inner Clock That Rules Our Lives*
Comprehension Check: 1. a, 2. d, 3. d, 4. a, 5. b, 6. d, 7. a, 8. b, 9. b, 10. c
Vocabulary Check: 1. d, 2. a, 3. c, 4. a, 5. c

8 *The Story of a Newspaper*
Comprehension Check: 1. b, 2. c, 3. d, 4. c, 5. a, 6. a, 7. b, 8. d, 9. b, 10. b
Vocabulary Check: 1. b, 2. c, 3. d, 4. c, 5. a

9 *The Scientific Aesthetic*
Comprehension Check: 1. c, 2. a, 3. b, 4. b, 5. d, 6. c, 7. d, 8. c, 9. b, 10. d
Vocabulary Check: 1. b, 2. c, 3. c, 4. b, 5. b

10 *Speaking of Speaking*
Comprehension Check: 1. b, 2. a, 3. c, 4. a, 5. c, 6. d, 7. b, 8. a, 9. d, 10. d
Vocabulary Check: 1. a, 2. b, 3. a, 4. c, 5. d

11 *A Memory for All Seasonings*
Comprehension Check: 1. a, 2. b, 3. a, 4. d, 5. a, 6. d, 7. b, 8. b, 9. b, 10. a
Vocabulary Check: 1. d, 2. a, 3. c, 4. c, 5. b

12 *Bartering Is Back*
Comprehension Check: 1. d, 2. a, 3. b, 4. d, 5. c, 6. b, 7. b, 8. d, 9. a, 10. b
Vocabulary Check: 1. c, 2. d, 3. a, 4. c, 5. b

13 *Megavitamin Madness*
Comprehension Check: 1. b, 2. b, 3. d, 4. c, 5. d, 6. c, 7. c, 8. c, 9. c, 10. a
Vocabulary Check: 1. c, 2. d, 3. b, 4. a, 5. d

14 *Native Tongues*
Comprehension Check: 1. a, 2. d, 3. d, 4. b, 5. c, 6. d, 7. b, 8. b, 9. a, 10. c
Vocabulary Check: 1. d, 2. d, 3. a, 4. b, 5. a

15 *Why People Make Mistakes*
Comprehension Check: 1. a, 2. b, 3. b, 4. c, 5. b, 6. c, 7. b, 8. b, 9. c, 10. d
Vocabulary Check: 1. a, 2. d, 3. b, 4. c, 5. b

16 *Journey to a Lost World*
Comprehension Check: 1. d, 2. c, 3. d, 4. c, 5. b, 6. b, 7. d, 8. a, 9. d, 10. b
Vocabulary Check: 1. b, 2. b, 3. a, 4. c, 5. b

17 *Saving Books with Science*
Comprehension Check: 1. c, 2. d, 3. c, 4. d, 5. d, 6. d, 7. d, 8. b, 9. a, 10. d
Vocabulary Check: 1. c, 2. d, 3. a, 4. b, 5. d

18 *What the Nose Knows*
Comprehension Check: 1. b, 2. c, 3. d, 4. c, 5. c, 6. c, 7. d, 8. b, 9. c, 10. b
Vocabulary Check: 1. c, 2. b, 3. b, 4. a, 5. a

19 *When Aristotle Fails, Try Science Fiction*
Comprehension Check: 1. c, 2. c, 3. b, 4. b, 5. d, 6. a, 7. d, 8. a, 9. d, 10. a
Vocabulary Check: 1. a, 2. c, 3. b, 4. a, 5. d

20 *Snoring: An Unwelcome Bedfellow*
Comprehension Check: 1. a, 2. d, 3. b, 4. c, 5. b, 6. a, 7. d, 8. c, 9. c, 10. d
Vocabulary Check: 1. d, 2. b, 3. c, 4. b, 5. d

21 *The Selling of the President*
Comprehension Check: 1. b, 2. b, 3. a, 4. b, 5. c, 6. b, 7. b, 8. d, 9. d, 10. d
Vocabulary Check: 1. a, 2. d, 3. c, 4. c, 5. a

22 *Better Temper That Temper!*
Comprehension Check: 1. b, 2. a, 3. b, 4. b, 5. b, 6. d, 7. a, 8. c, 9. b, 10. c
Vocabulary Check: 1. c, 2. a, 3. c, 4. d, 5. c

23 *Record Innovations Over the Years Recalled*
Comprehension Check: 1. b, 2. d, 3. d, 4. b, 5. c, 6. a, 7. b, 8. b, 9. d, 10. b
Vocabulary Check: 1. d, 2. d, 3. a, 4. c, 5. c

24 *Life According to TV*
Comprehension Check: 1. d, 2. b, 3. d, 4. c, 5. b, 6. d, 7. a, 8. c, 9. a, 10. b
Vocabulary Check: 1. a, 2. b, 3. a, 4. b, 5. c

25 *Some Businesses Take Advantage of the Unwary*
Comprehension Check: 1. b, 2. d, 3. a, 4. b, 5. d, 6. d, 7. c, 8. d, 9. b, 10. a
Vocabulary Check: 1. c, 2. b, 3. a, 4. b, 5. a

26 *Working With Graphs*
Comprehension Check: 1. b, 2. b, 3. a, 4. d, 5. b, 6. a, 7. d, 8. b, 9. a, 10. b
Vocabulary Check: 1. c, 2. a, 3. a, 4. d, 5. c

27 *Arguments, Premises, and Conclusions*
Comprehension Check: 1. b, 2. d, 3. c, 4. c, 5. d, 6. d, 7. b, 8. b, 9. b, 10. b
Vocabulary Check: 1. a, 2. c, 3. d, 4. c, 5. c

28 *Eclipses: Occasions for Awe*
Comprehension Check: 1. d, 2. a, 3. d, 4. b, 5. c, 6. c, 7. d, 8. a, 9. c, 10. b
Vocabulary Check: 1. c, 2. d, 3. d, 4. c, 5. a

29 *Choosing the Right Word*
Comprehension Check: 1. b, 2. c, 3. a, 4. b, 5. b, 6. d, 7. a, 8. d, 9. c, 10. d
Vocabulary Check: 1. c, 2. a, 3. a, 4. c, 5. d

30 *Social Class in America*
Comprehension Check: 1. b, 2. c, 3. a, 4. a, 5. b, 6. b, 7. c, 8. d, 9. c, 10. a
Vocabulary Check: 1. c, 2. c, 3. c, 4. d, 5. d

31 *How We Listen to Music*
Comprehension Check: 1. c, 2. b, 3. a, 4. b, 5. b, 6. c, 7. c, 8. c, 9. c, 10. c
Vocabulary Check: 1. b, 2. b, 3. d, 4. d, 5. d

32 *Orientation to Computers*
Comprehension Check: 1. b, 2. a, 3. c, 4. b, 5. a, 6. b, 7. d, 8. c, 9. c, 10. d
Vocabulary Check: 1. c, 2. a, 3. b, 4. d, 5. c

33 *Bureaucracy and Politics*
Comprehension Check: 1. b, 2. b, 3. b, 4. d, 5. a, 6. b, 7. c, 8. b, 9. c, 10. c
Vocabulary Check: 1. b, 2. a, 3. b, 4. c, 5. a

34 *Early Numeration Systems*
Comprehension Check: 1. d, 2. d, 3. c, 4. d, 5. c, 6. a, 7. c, 8. a, 9. c, 10. a
Vocabulary Check: 1. c, 2. b, 3. d, 4. c, 5. b

35 *The Last Leaf*
Comprehension Check: 1. d, 2. c, 3. a, 4. d, 5. c, 6. b, 7. d, 8. c, 9. c, 10. b
Vocabulary Check: 1. b, 2. a, 3. b, 4. c, 5. d

36 *The Untold Lie*
Comprehension Check: 1. d, 2. d, 3. b, 4. d, 5. c, 6. d, 7. a, 8. c, 9. b, 10. b
Vocabulary Check: 1. a, 2. b, 3. d, 4. a, 5. d

37 *The Teachings of Don Juan*
Comprehension Check: 1. c, 2. c, 3. c, 4. a, 5. a, 6. d, 7. c, 8. a, 9. b, 10. a
Vocabulary Check: 1. a, 2. c, 3. d, 4. a, 5. c

38 *The Rocking-Horse Winner*
Comprehension Check: 1. d, 2. d, 3. c, 4. a, 5. c, 6. a, 7. c, 8. c, 9. d, 10. b
Vocabulary Check: 1. b, 2. d, 3. d, 4. a, 5. b

39 *The Catbird Seat*
Comprehension Check: 1. b, 2. c, 3. d, 4. a, 5. b, 6. c, 7. c, 8. c, 9. c, 10. a
Vocabulary Check: 1. d, 2. c, 3. c, 4. b, 5. a

40 *Story of a Good Brahman*
Comprehension Check: 1. a, 2. c, 3. c, 4. a, 5. a, 6. a, 7. c, 8. c, 9. c, 10. d
Vocabulary Check: 1. a, 2. c, 3. c, 4. b, 5. c

Posttest *Variety*
Comprehension Check: 1. a, 2. d, 3. d, 4. d, 5. b, 6. c, 7. a, 8. c, 9. d, 10. a

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